Bradford calls for fees fight conference

by Judith Judd

Bradford University this week took the lead in the fight against increased tuition fees by inviting all other universities to a joint conference on the problem.

As student militancy over fees swept through the country, Bradford, which has already decided not to charge higher fees for overseas students, sent out letters calling for joint action.

Most universities are still considering the letter but Warwick has already agreed to the conference. Dr John Butterworth, Warwick's vice-chancellor addressed a teach-in on fees on Wednesday to mark the National Union of Students day of action.

At Sussex a university spokesman said it favoured joint action but would like to work through the Committee of Vice-chancellors and Principals.

In the polytechnics, there were also signs that staff and students are coming together on the question. Dr George Brosan, director of the North East London Polytechnic, offered occupying students there a conference to which representatives of the Department of Education and Science and other polytechnics would be invited.

In Leeds the polytechnic's governing body has sent a strong recommendation to the local authority not to implement the fees for self-supporting students and not to charge discriminatory fees to overseas students.

Lanchester Polytechnic, in a resolution passed by Coventry City Council, has urged the Association of Metropolitan Authorities and the Association of County Councils to work for the retention of the present fee structure until a logical one has been developed.

In some places the week's events caused conflict between students and staff. Members of the Association of University Teachers at Sheffield University voted by 179 to 51 to withdraw all services to students, including teaching, from noon on Tuesday.

Their action came in response to a week-long student occupation of the administrative block which had paralysed the university and its switchboard.

Dr Julian Kinderlerer, a member of the university's AUT committee, said: "We are doing this in solidarity with our colleagues on the administrative staff. If the students want to take militant action they must expect to suffer."

Lecturers, however, were prepared to support the student lobby of Parliament in protest against the fees on Wednesday. A meeting of 3,000 students voted to continue their occupation despite the staff's action.

Members of the Lancaster University branch of the AUT have also voted to withdraw their services in the event of another occupation. At University College, Cardiff, there were scuffles as staff tried to break up an occupation.

By the time the NUS day of action came most students had already started occupations. Students at Kent University began their occupation, which closed down the switchboard, on Monday and those at City University, Brunel and the North East London Polytechnic began last week.

About 1,200 students at the usually moderate University College London agreed on Tuesday to begin a two-day sit-in. Another 1,000 at Southampton did the same.

At York University and South Bank Polytechnic there were one-day work-ins. A teach-in at Bath University was attended by the vice-chancellor.

On Wednesday occupations began at Hull and Manchester universities, at Kingston, Kilburn, Sunderland and Wolverhampton polytechnics, Harrow College of Further Education and North Gloucestershire Technical College.

Although there is widespread sympathy for the students' position among university authorities, most see no alternative to their implementation. The cost of failing to do so would be prohibitive.

Imperial launches effort to increase contract research

by Clive Cookson
science correspondent

Imperial College is to make a major effort to increase its income from contract research, and to broaden the content of its undergraduate and postgraduate courses.

The rector, Sir Brian Flowers, has set up a professorial Advisory Group on Outside Income to help achieve the first objective. Its preliminary meeting agreed that "without losing sight of the college's role as a teaching institution, there is an urgent need to maximize income from contracted research".

The college's research income from sources other than the University Grants Committee was £3,790,000 in 1975/76. This was 18 per cent of total income, compared with 22 per cent in 1972. Only £700,000 came from private industry, and only one-fifth of research projects are currently contracts.

The group decided that a senior member of the academic staff should be given the job of "forging contacts with industry at the highest level and forming an effective focus of information concerning research opportunities". The decision has been endorsed by the college's finance and executive committees. His salary will be paid from sources outside the UGC block grant.

Sir Brian's second initiative has been to set up a Committee on Academic Development with the following terms of reference:

- to review the form and content of undergraduate courses and in particular to consider the development of four-year courses and broadening content to include economics, management and languages;
- to advise on the extension of the sandwich course principle and on new first-degree qualifications (as suggested in the recent Commons select committee report on university/industry relations);
- to consider the structure of postgraduate training, including a general broadening of its content and expansion of "total technology" and "teaching company" proposals.

No increase in funding

continued from page 1

The commitment to teacher training is emphasized. Plans are for a gradual expansion of in-service training and the beginning of induction training for those newly qualified.

Four years of stability in the science budget are anticipated after the 7.6 per cent fall from 1975-76 to 1976-77. The expenditure of the five research councils (with the Natural History Museum and the Royal Society) will remain between £215m and £217m a year up to 1980-81.

However, resources devoted by the Science Research Council to "big science" (high energy physics, astronomy and space science) will be reduced by about 25 per cent over the period, in accordance with last year's advice by the Advisory Board for the Research Councils. This will release £11m "to preserve scope for initiatives by the SRC in other fields (including engineering) and by the other councils".

The figures take account of the small reductions in the science budget incorporated in last year's public spending cuts. But they have been balanced by an addition to allow for the big increases in postgraduate fees from next year.

The Government's Expenditure Plans Volume II. HMSO £2.35.

Leader, page 16

Question mark on AUT pay policy support

All unions involved in education seem likely to support phase three of the incomes policy, except the Association of University Teachers.

Officially the AUT has "an open mind", but if the phase three package does not allow its pay grievance to be met, a strong feeling against restraint might be shown at the AUT council's May meeting.

The union would cast its TUC vote against restraint if other groups received "above-the-norm" benefits while the AUT, which still believes itself unjustly treated by the Government two years ago, has no chance to demand more.

Like the AUT, however, the other education unions have still to take up a formal position. The executive council of the National Association of Teachers in Further and Higher Education, for example, meets tomorrow to discuss its next salary claim to the Burnham committee and its attitude towards a continuation of the social contract.

An exhibition to celebrate the work of J. R. R. Tolkein (above) opened at the National Book League, Albemarle Street, London, this week. The exhibition includes first editions, manuscripts and original illustrations by the author for *The Lord of the Rings*, *The Hobbit* and the recently published *Father Christmas Letters*.

End certificate by 1979—ACSTT

The certificate of education should be phased out from September 1979, the Government's Advisory Committee on the Supply and Training of Teachers has decided. But it has delayed making a formal recommendation to the Secretary of State because of anxiety about the fate of shortage subjects if this happens.

In a statement issued after their meeting last Thursday the committee said it would consider further what special measures needed to be taken to ensure a supply of teachers in such subjects as mathematics, music, handicraft, physics, business studies and remedial education.

The Government is known to be worried that the end of the certificate will create further problems in these subjects which are already short of teachers.

The National Association of Teachers in Further and Higher Education, on the other hand, is keen that the certificate should be phased out as soon as possible. The association points to the much higher rate of unemployment among teachers with the certificate than among those with BEd qualification. This was highlighted in a recent report on unemployment among newly qualified teachers.

Hudson goes south

Professor Liam Hudson, at present professor of educational sciences at Edinburgh University, has been appointed professor of psychology at Brunel University.

The author of many papers and books on educational and psychological issues, his most widely read publication is *Contrary Imaginations*, a study of the psychological factors distinguishing those school children studying science and humanities subjects. He is expected to take up the appointment at the beginning of the 1977-78 academic year.

Brunel merger may save Shoreditch from closure

Shoreditch College, Egham, may escape closure by joining Brunel University. The university has been asked to consider the scheme by the Department of Education and Science.

The DES acted to save the likely victim of the cutbacks in initial teacher training places planned by the Inner London Education Authority because the college is a major producer of handicraft teachers; as craft is a shortage subject, its closure would have serious effects nationally.

Last month, Mr Peter Newsam, the ILEA's education officer, produced a report suggesting that either Avery Hill, Eltham or Shoreditch would have to close and that he favoured Shoreditch. This report was later withdrawn but it is known that many people in the authority are strongly opposed to the closure of Avery Hill.

It is believed that the ILEA has been using Shoreditch in its fight to get more teacher training places for London. If the Brunel scheme goes ahead, the tactic wi succeeded.

The ILEA argues that the G ment suggestion to close Fu and Philippa Fawcett Colle the Sidney Webb College reduce initial teacher places in the rest of Lo 500 fails to acknowledg London is a national a local supplier of teachers.

After the meeting of the Ad Committee on the Supply and ing of Teachers last wee Newsum told the college tha was a growing commitmen places Shoreditch provided a all possibilities would be e to ensure its contribution con

A spokesman for Brunel sa week that discussions were going on and there was sympathy for the college i university.

He said the vice-chancell S. L. Bragg, would probably decided by the beginning of week whether to put a pro about Shoreditch to the sena

Cuts approach attacked

Professor Ralf Dahrendorf, director of the London School of Economics, has criticized the lack of consultation with universities on education spending cuts in his annual report. He complained that they were not encouraged to take the initiative in making economies but to sit back passively and wait.

"No one needs encouragement more than publicly controlled organizations, to which universities belong", Professor Dahrendorf said. "Nothing is more costly than discouraging them by unnecessarily restrictive rules, time-consuming bureaucratic exercises and the general practice of domination by pettiness."

Poly asks for quota talks

City of London Polytechnic g ernors are to appeal to the London Education Authori top-level talks before taki decision about implementi authority's controversial ov students' quota policy.

The polytechnic, which is ing its overseas student pla the next academic year at level until a decision is hopes that the talks with the will lead to a compromise.

The authority has instructed five polytechnics it funds— South Bank, Central London, London and Thames—to their overseas numbers to cent by 1982.

Two-pronged attack on polys

continued from page 1

"I hope that local education authorities will not let such financial considerations prevent polytechnics and colleges of education, which have teachers available, from making a contribution to providing courses for the young unemployed."

Mrs Williams chastised the polytechnics for the disappointing level of expansion in part-time education. She told the conference she hoped to see this area of public sector higher education expanding over the next few years.

The polytechnics had increased their enrolments of part-time students on advanced courses from about 45,000 in 1965 to 54,000 in 1975. But "In many cases this is the only type of course that mature students can manage and it is now essential that these opportunities are open to them".

Sandwich students represented nearly one third of all in polytechnics, said Mrs Williams. She was aware of the difficulties of maintaining such a large of placements in industry at a of recession.

"In recognition of this pr the Government has made av through the Training Se Agency, a sum of more than the current year to provide for over 3,000 students on types of sandwich course".

Appealing to industry to m need more clear she said that had been a marked upsur applications to science and engi ing courses in higher educa The number of first-year stu on polytechnic full-time and s wich courses in these disci in 1973-74 had been 6,172. By it had risen to 7,661.

Talking about the finance she said she had not entirely gotten the "13 points" put in the 1960s and cuts could been made in some of these that would have been than the controversial

Leader, page

Who controls HE?

A conference to examine who controls higher education has been organized by the University Teachers' Group in association with *The Times Higher Education Supplement*. It will be held at St Anne's College, Oxford, from April 1 to 4.

Among the speakers will be Mr Gerry Fowler, former Minister of State at the Department of Education and Science, Professor Max Beloff, principal of University College Buckingham, Professor Brian Gowenlock, professor of chemistry at Heriot-Watt and a member of the University Grants Committee, and the Rev Dr George Tolley, principal of Sheffield City Polytechnic.

The fee for the conference will be £29.50. Further details can be obtained from Mr David Hide, the UTG's conference organizer, at 38 Elmfield Road, Gosforth, Newcastle upon Tyne, NE3 4BB.

NEXT WEEK

Fred Inglis on British intelle
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P. J. Black on university scie
education
Peter Sheldrake on educatio
research in Australia
Prospects for in-service trai
next year
The future of the Rutherfo
laboratories
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Profile of Daniel Bell by
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Wallis's study of scientolo

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Ralf Dahrendorf compares the student troubles of 1977 and 1968

Fear is spur behind this unrest

There is no need to be surprised that a brief period in which students seemed to some to have quietened down is over.

When I sat through the disruption of the tenth anniversary celebration of my old University of Constance last year, heard the stories of Italian and Dutch friends, saw the graffiti in Leuven a few weeks ago (including a rather funny one: "Oh Lenin return! They are mad!"), it did not take the British government's strange decision on tuition fees to predict what would happen in the livelier universities of the country during the carnival season.

The surprising fact is what the New Restlessness is about, for its objectives are totally different from those of the late 1960s, and they mirror a development in the educational scene which is dramatic and disturbing.

Before I offer a few comments on this wider question, let me repeat a point which I made in an earlier column, in various articles, in contributions to discussions in many relevant places, that the tuition fee increases, the method of their announcement as well as their level, in my view border on the irresponsible.

Even apart from the question of differentials, they change the system of university finance by stealth, and introduce an anti-postgraduate and anti-overseas policy through the back door, placing additional burdens on local authorities in the process. It takes either great cynicism or great ignorance to introduce such a system, and the sooner it is thoroughly revised the better.

When I first said this, students were silent. When two successive Secretaries of State announced the fees last year there was no uproar among students. That is perhaps understandable, for only a minority are affected by this change in system, and those affected are not the poor—at least not the traditionally poor—but the relatively well-to-do who find it increasingly difficult to pay for the contributory social services.

Not one British working-class child is deprived of tertiary education by the new system of fees, although some may find postgraduate education, or midway changes of subject, a little more difficult now. I do not say this to offer excuses for indefensible fees, I say it to bring out the rationale—if any—of a new wave of student unrest.

For what this is about (I believe—and I do not want to claim certainty for what is essentially a tentative explanation) is in fact a defence of the status quo, of existing privileges perhaps, against threats to some which feed the latent fear of many in higher education that things will get worse and worse and that this deterioration has to be stopped.

The motive of unrest is fear, fear of an uncertain future. Such fear is shared by lecturers and professors, university administrators and vice-chancellors. Not surprisingly, therefore, many of them have found it useful to join their restless students in their demands.

But what a change this is by comparison with 1968!

Whatever else one may think about students in the late 1960s, few would deny that they felt they were riding on the crest of a wave, that the future was theirs. Education, tertiary education in particular, had gone through a phase of unprecedented expansion. Those involved in it saw great opportunities both in the narrow sense of job opportunities and in the wider sense of influencing society at large.

They felt that perhaps their claims were not sufficiently recognized by the world. They wanted to conquer social institutions: university senates in the first place, then party committees or other congenial organizations, in some cases entire political communities. With all the confusions, local and national differences which were characteristic of "troubles" in the late 1960s, they had one thing in common—the self-confident assertion of new claims, the demand for a place in the sun. Education in the 1960s produced a rising class, and in that sense a genuine revolutionary potential.

But alas this phase was almost unbelievably short-lived. Strange as this may seem, the rising class of the late 1960s has become a declining class in the late 1970s. The successors of those who thought 10 years ago that the future was theirs are now worried about their future, defensive, demanding protection rather than asserting confidence.

There is a symbolic story to tell in this context. During the well-publicized "troubles" of the late 1960s at the London School of Economics, there was a point at which those responsible for the school felt they had to put up gates in order to protect the library, and perhaps the staff, from the expanding mass of students sitting-in and demonstrating all over the place.

During the recent occupation of the LSE administrative building, one of the more striking features was the fact that although students were at all times allowed free access to the occupied area and nobody tried to force his way in, they themselves began at an early date to lock and chain doors, and to erect barricades of filing cabinets and chairs—a rather pathetic sight that, and yet the rebels of the 1970s probably are frightened and insecure rather than confident and convinced of their rights.

In this they reflect the short rise and rapid fall of tertiary education in the societies of Europe. In 1965, it was not difficult to convince parliaments of the need to allocate funds to expanding universities, indeed even a wider public could develop a certain enthusiasm for the creation of new universities and polytechnics; local communities were often proud to have them. In 1977, universities are pleased if their real income is cut by only two per cent because they fully expected to have it cut by four per cent, and it is almost taken for granted that salaries for academics compare badly with those of other groups.

In constituencies, tertiary education probably ranks with aid for developing countries as one of the most unpopular issues of political debate. In a very real sense, tertiary education has become a declining industry (if that is the word for places of the leisurely pursuit of learning).

Declining branches of human activity are not particularly agreeable to deal with. One can understand their plight, but their demands evoke the picture of a closed society.

I cannot help thinking back to the numerous visits which I had as External Relations Commissioner in Brussels by representatives of the textile industry. Usually, employers and trade union representatives came together, assured me of their total unanimity and asked for protection—tariffs, quotas, subsidies. They had their reasons, but I am bound to say that I have little enthusiasm for a world in which everybody clamours for, and gets, protection, because nobody has the confidence any more to stand on his own two feet.

In the case of tertiary education, the problem is partly one of misguided motives. Fred Hirsch, in his remarkable book on the *Social Limits to Growth*, points out impressively just how wrong the notion

continued on back page

Student Power.
WAS RIGHT.
Ralph STEADMAN

Large cash swing to social sciences

by Clive Cookson
and David Walker

The Social Science Research Council is to get a significantly larger slice of the Department of Education and Science's research budget in the coming financial year.

Its income for 1978-78 is expected to be £14.5m, 29 per cent more than the 1976/77 figure of £11.2m. This will probably represent a real rise of about 15 per cent when inflation is taken into account, but the SSRC says the huge increases in postgraduate fees from next October will leave it with only 1 per cent more disposable income.

The Science Research Council budget, on the other hand, will be 2 per cent down in real terms, at £138m. This is in line with the forecast in the SRC annual report last October, that funds would decline at 2 per cent a year until 1981.

The money is to be distributed between the four SRC boards as follows: nuclear physics £43.3m, astronomy and space £27.6m, science £23.3m, engineering £14.5m. The remaining £30m will be spent on international subscriptions (mainly to the European Centre for Nuclear Research) and administration: "big science" will lose money, engineering will gain a little and general science will be in the same position as last year.

The income of the remaining three research councils from the DES "science budget" will be approximately the same as this year. The Medical Research Council will receive £42.3m, the Natural Environment Research Council £29.5m and the Agricultural Research Council £20.4m.

All three rely on work commissioned by other Government departments for a considerable proportion of their income. The MRC is anticipating a two per cent fall in total income of £55m because of less support from the Department of Health (and an unfavourable change in the way it is assessed for VAT).

The ARC will receive an extra £24.2m from the Ministry of Agriculture—about the same as this year—making a total income of £44.6m.

Although the SSRC has to spend a much larger proportion of its income on postgraduate courses than its four sister councils, they too have considerable commitments in this area. When these are taken into account, it is clear that social science has come out on top in the division of the spoils.

Group urges halt to genetic engineering

from Michael Binyon

WASHINGTON

A three-day forum on recombinant DNA research, organized by the National Academy of Sciences, got off to a controversial start last week when some of those taking part called for a halt to all further experiments in this field.

Dr George Wald, the Harvard University biologist and Nobel Prizewinner, together with Dr Liebe Cavalieri and other scientists, announced the setting up of a coalition for responsible genetic research (CRGR) which called for "an immediate international moratorium on all research that would produce novel genetic combinations.

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Graduate employment

Cooperation urged for 3,000 industrial jobs

by Frances Gibb

Industry would have to offer an extra 3,000 to 4,000 jobs to graduates next year to counterbalance the cuts in other sectors of employment, according to the Durham University Careers Advisory Service annual report for 1975/76. But it believes this is only likely to happen if there is considerable cooperation between Government, the universities and employers.

If the Government was serious in its intention to encourage more graduates to enter industry, then the present policies of the Manpower Services Commission and of some Government departments needed to be better aligned with this aim.

The Job Creation Programme regulations should be changed to make it practicable for industry and commerce to initiate projects, it says. So far, the commission funds had been used almost entirely to provide jobs in the public service and voluntary organizations. TOPS awards, financed by the Training Services Agency, should be available to graduates who need further full-time training to equip them for industry and commerce.

In universities, the report suggests, there should be more contact between staff and employers. This was at present non-existent, even in science departments. The initiative must come from employers but they would need to feel their approaches would be welcomed.

More graduates from Durham went into industry (103) and commerce (131) last year compared with the year before (68 and 84) and fewer into the public services (96 against 153 in 1975).

Several industrial employers did not recruit all the graduates they needed, particularly electrical engineers, applied physicists, and scientists interested in computing, partly because they set unnecessarily high standards, so that the best applicants had half a dozen or more offers, while the average often had none.

In commerce, trainee chartered accountants were in particular demand.

Private sector ‘to take more’

The private sector is likely to recruit some 30 per cent more graduates this year than last, Mr Kenneth Dibden, director of London University Careers Advisory Service, has predicted.

In an article to be published in the university *Bulletin*, he says this information may encourage final year students at present “flocking in on an unprecedented scale for interviews with employers”.

His original estimate that between 10 and 15 per cent of London University's first degree graduates last year would be unemployed at the end of the year has turned out to be over-pessimistic.

The proportion, excluding medicine, veterinary science and dentistry students, was 8.1 per cent, 2 per cent lower than in 1975 when it was 9.9 per cent. In 1974 the figure was 3.9 per cent.

Among higher degree students, only 2.5 per cent were unemployed at the end of the year compared with 3.2 per cent the year before.

Two-thirds find work

Over two-thirds of graduates from Hatfield Polytechnic gaining permanent jobs last year went into industry, according to a survey by the Hertfordshire Careers Service on the destinations of final year students.

Of all final-year students, 68 per cent went into permanent employment. Of these, 69 per cent went into industry and 18 per cent into the public sector. One in ten continued with further research or academic study.

Students who had the least difficulty finding jobs had completed courses in electronic engineering, computer science, mathematics and business studies.

Demand for graduates was likely to continue the swing from the public to the private sector, the careers service concluded. National predictions showed an increase in demand from the manufacturing industry of 30 per cent over last year, while demand from the civil service and local authorities had fallen in the past two years by about 50 per cent.

Call of UK summer schools

Over half the students attending international summer schools at Birmingham, Leeds, Oxford, London and five Scottish universities last year came from the United States, according to the universities' joint committee annual report.

There was a considerable drop in United States enrolment for the London school which was particularly marked among young teachers and recent graduates, but this could be a reflection of the present job uncertainties of the group, the report says. United States' enrolment for the Stratford School increased, however.

The other students at the four schools came from some 34 countries.

The predominant theme last year was modern studies, with three of the four schools offering some aspect of 20th century literature.

Joint Committee Report, from the University of London Department of Extra-Mural Studies, 7 Ridgmount Street, London, WC1.

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Sir Samuel Curran—‘Britain unwilling to experiment’.

SISTERS likely to get cold shoulder–Strathclyde v-c

The idea of the elite Special Institutions for Scientific and Technological Education and Research (SISTERS) is unlikely to be adopted because of Britain's unwillingness to experiment, according to Sir Samuel Curran, vice-chancellor of Strathclyde University.

In his annual report for 1975/76 he says that when the idea was first raised by the Robbins Committee 13 years ago, Strathclyde was one of the universities proposed. At the time, however, it was not notably strong in postgraduate work, and the Robbins Committee had envisaged the SISTERS having a substantial proportion (30 per cent) of students engaged on advanced study.

But now, although the univesrity could easily grow to that postgraduate strength it was unlikely the proposal will be adopted.

Britain had shown very little insight into the nature of the infrastructure of modern industry unlike the United States, France and Germany which had always paid more attention to their leading technological institutions than Britain.

He welcomes recent references to the idea of differential grants for technology and engineering students. In sharp contrast to other advanced nations, technology had not much status or prestige in our society. Apart from the financial incentive, the evidence of the Government's wish to strengthen the graduate entry to industry and commerce could do much to change the attitude of young people towards this sector.

“Personally I believe the proposal to introduce differential student awards, favourable to the engineer or technologist, is well worthy of support.”

Sir Samuel comments on the low morale presently in universities, particularly as a result of university teachers' poor pay. Government committees continued to expect assistance on a voluntary basis on scientific, technological, social and economic affairs, but in the end many of these affairs proved financially disadvantageous to staff and certainly to universities.

“How long the tradition of university staff giving such support can continue in these circumstances is an open question,” he says.

Cuts have ‘almost eliminated’ adult education in some areas

Adult education is being virtually eliminated in many parts of the country because of cuts in discretionary awards and increased fees, Dr Keith Hampson, vice-chairman of the Conservative parliamentary education committee, warned this week.

He told the Association for Recurrent Education at Ruskin College, Oxford, that a new stimulus was needed in adult education, which could be created by a national development council for continuing education.

Dr Hampson predicted that the Government would announce details of its long-promised advisory council at the National Institute of Adult Education annual conference at Lancaster University in April. But he warned: “I emphasize that this body should be a development council and not merely advisory, which, after much heart-searching the Government is rumoured to be planning.”

The system needed an enabling mechanism which would act as a catalyst. “It would not take away local authority powers and initiatives but should have funds to check indiscriminate developments, promote cooperation and have the means to offer incentives to institutions and individuals to produce greater productivity.

Mr Gerald Fowler, former minister of state overseeing higher education, also expressed disappointment over the progress of the great debate. It ill became industry to criticize the education system when the slow development of day-release and paid educational leave was considered.

About 40 per cent of children had no contact with education after leaving school. The resources allocated to the post-school system had no impact on them at all, he maintained.

Mr Fowler said that opportunities for mature students to enter teacher training were now declining. But the Government's efforts to increase the teaching profession's awareness of productive industry could be satisfied by bringing in people who had deferred their specialist training. If mature students could receive grants from 21 there would be a real incentive to have three years' work experience before training.

The real answer to the problem was to adopt a recurrent system, he suggested. There was also a tendency in the great debate to look backwards to the school system but some learning now had to be centred on the work place.

Lord Briggs, provost of Worcester College, Oxford, said it was essential to review regularly the provision and financing of adult education and take it seriously in relation to the education system as a whole.

Whatever changes were made in higher education it could never do more than cater for a minority. But adult and recurrent education had always been a deprived area: It made great claims but received very little resources.

Guide to Scots courses

The Scottish Education Department has just published a new edition of the handbook to the Central Institutions outlining their entry requirements and the range of courses available. It is available from the SED, 8 George Street, Edinburgh EH2 2BF (no price).

Neurosurgery £30,000

Newcastle upon Tyne University has received £30,000, the first instalment of a gift of £120,000 to endow a readership in neurosurgery. The gift has been made by Mr William Leech, a Newcastle businessman, in acknowledgment of the services given by the medical school.

TEC takeover of art and design courses

by Sue Reid

A new committee to validate vocational courses in art and design is to be set up under the control of the Technician Education Council, the Government announced this week. Details of the scheme, which is expected to provoke protests from some quarters, have been sent to 42 organizations connected with art and design education as a preliminary to detailed talks about the construction of the new body.

The organizations have been told that the format of the committee must have the widest possible support among colleges, employers, practitioners and the professional bodies representing art and design interests.

But a covering letter from the Department of Education and Science states that while the Business Education Council should be closely involved in consultations about the new body it would, with safeguards, be built into the main structure of the TEC.

The letter adds: “This would involve setting up a new committee for art and design, with a distinctive place in the committee structure of the council. Its membership should include a high proportion of practitioners in art and design drawn from the main interested bodies.”

The committee would consider and propose to the TEC any changes in its educational policies which might be required for course programmes in art and design and recommend the setting up of any additional committees or procedures deemed necessary, says the DES.

Mr Gerald Fowler, former minister of state overseeing higher education, announced in the House of Commons last July the Government's opposition to an autonomous body to validate art and design courses. He dispelled hopes that an earlier proposal for separate validation machinery, made by a working group set up as a result of the Haslegrave report on technician education, would be adopted.

But many artists and designers in education are strongly opposed to links with either the TEC or the BEC. Delegates at last year's widely represented Association of Art Institutions conference voted in favour of urging the DES to recognize their own body as the appropriate organization to represent all aspects of art and design education.

Lord Vaizey raises moral issues of great debate

Teachers at all levels had the duty of reasserting moral absolutes during the present crisis of moral authority in Britain, Professor Lord Vaizey of Brunel University said in his Winifred Mercier Memorial Lecture at Whitelands College, Wimbledon, at the weekend.

Lord Vaizey said the advance of “moral relativity” in society was eating away at the foundations of British civilization and demanding from teachers and all those who influenced opinion the rediscovery of their moral duty.

“The Great Debate which the Prime Minister has initiated is ultimately a truly great debate about truth, goodness, beauty and patriotism—old values, long scorned, which alone can restore some sense of dignity to our long-suffering people.

“In these circumstances the schools have an absolute duty to reassert these principles and to seek to combine the freedom and self-expression of children and students with an overwhelming commitment to truth, hard work and disciplined self-improvement and social improvement.”

The fall in the quality of school teaching, and the collapse of the ideal of a common basis of the cultivated life, were major factors in the present social crisis. Equality and democracy did not mean equality of ignorance and indifference to truth.

The annual lecture takes its name from a former principal of Whitelands College, now part of the Roehampton Institute of Higher Education.

Industry awards will be few

by Sue Reid

The industrial scholarships announced by Mr Oakes, minister of state overseeing higher education, to attract Britain's brightest sixth-formers into relevant university and polytechnic engineering courses will be small in number and highly competitive.

A Department of Education and Science official said this week that the scholarships would be awarded to undergraduates entering existing engineering courses or higher education programmes “designed specifically for particularly able candidates”.

Selection of sixth formers for the scholarships would be based on attainment, potential, character, motivation and capacity. The choice of successful candidates would involve schools and industry, he said.

Following the announcement at the third Great Debate conference at Preston Polytechnic last week it was generally assumed that the scholarships would be awarded to school pupils between 16 and 18. But the DES disclosure this week has made it clear that the Government is planning the scholarships as “status” awards for undergraduates.

While discussions about the final number and the amount of the scholarships are still in the preliminary stages the Government is anxious that they should be jointly sponsored by the DES and sections of industry.

Informal talks between the Confederation of British Industry, the TUC and the DES have taken place but will now be expanded. Individual firms will also be invited to give their views on the scholarship plan before any final details are given. An announcement is expected before Easter.

School leavers accepting places on both polytechnic and university courses will be considered for the scholarships. The DES reference to specially designed engineering courses seems likely to refer to the University Grants Committee's recently announced scheme.

The UGC is offering four or five universities money to help set up elite engineering courses to prepare “students of very high personal and intellectual qualities” for careers in manufacturing industry.

The scholarships were welcomed this week by the Conservative Party. Dr Keith Hampson, vice-chairman of its parliamentary education committee, who called for the introduction of a scholarship scheme last month, said that incentives were needed to promote industrial excellence.

He added: “We need a selective and refined treatment of the problem. It is not a massive switch from arts to science in general that is wanted. It is the attraction of the ablest into key areas of applied science and technology.”

The Government should launch a national industrial scholarship fund offering high prestige awards of between £500 and £600 competitively to 100 sixth formers to take up places in key areas of applied science and technology, he said.

Shoreditch should be saved, Newsam urges

by Judith Judd

The Inner London Education Authority should make every effort to preserve Shoreditch College, Egham, but Sidney Webb and Philippa Fawcett and Furzedown Colleges will have to close. These recommendations were made to the ILEA's Further and Higher Education sub-committee this week by Mr Peter Newsam, the authority's education officer.

His report says that, on balance, he believes the specialist courses at Battersea and Dartford should be kept. He suggests that Sidney Webb, now part of the Polytechnic of Central London, should close rather than the education department at the Polytechnic of North London.

The reasons given are the lessening need for mature students—Sidney Webb recruits only mature students—and the longer period which the other department has had within the polytechnic.

For the future of Shoreditch, Mr Newsam sees three possibilities: most satisfactorily, its places could be accepted as a national responsibility and added to the ILEA's allocation; or the college could be linked with another institution; or, if all else fails, some of its places could be transferred to Avery Hill, Eltham.

As it is likely that the authority will be able to retain only one free-standing institution he says that Avery Hill should remain.

Mr Newsam says that it is with reluctance that he makes no recommendation for preserving Sidney Webb and Philippa Fawcett.

The report points out that Inner London's proportion of initial teacher training will have declined from 5.3 per cent to 4.4 per cent by 1981.

‘National emergency’ in maths teaching, Salford v-c charges

by Clive Cookson
science correspondent

Any increase in the proportion of science and engineering students in higher education will be small unless school mathematics and science teaching improves, Professor John Horlock, vice-chancellor of Salford University, said last week.

He called the Royal Society's recent report on mathematics teaching “one of the most depressing I have seen recently”. It showed that nearly 60 per cent of those intending to teach in primary schools did not have O level mathematics, and a similar proportion in secondary schools did not have specialist training.

“I think, without fully qualified teachers, it is unlikely that we are going to see a big increase in the science pool from the schools. We may see a shift towards engineering, but this will be at the expense of the pure sciences”, Professor Horlock said.

Emphasizing his concern about the statistics, he said they almost deserved the description “national emergency—the problem of simultaneously reducing the overall numbers of teachers coming forward and improving mathematics and science teaching is a very great one”, he added.

Professor Horlock, who was speaking at a Manchester Polytechnic conference on “Influences on Tertiary Science Education”, said the primary economic pressure on universities and polytechnics would be to take more students without taking on any extra staff. Student/staff ratios in universities would probably rise from the present average of 8.7 (outside medicine) towards 10.

“We must recognize that the major demand on our resources is going to come from the 18-year-olds, now numbering 760,000, but going to reach a peak around 920,000 in 1983-84”. It would not fall back to its present level until 1992.

If social class was taken into account the drop in university and polytechnic applicants after 1984 was likely to be less than the corresponding fall in the number of 18-year-olds.

He described the quoted figure of 20,000 empty science places in universities as “mythical”.

Her Majesty's Inspector, Mr Norman Booth, who spoke after Profesor Horlock, chided university and polytechnic academics for their apparent lack of interest in developments in schools science education. “There is a kind of silence that is very difficult to penetrate”, he said.

He reminded his audience that the quality of school science and maths teaching depended on the way future teachers were treated during their time in higher education.

● The low status of engineers in Britain is due to the low academic requirements of the engineering institutions, according to the president of one of them.

“I would suggest that the qualifying bodies—which means organizations like our own—have sought quantity rather than quality, and have conferred professional recognition too easily”, Mr Eric Booth, President of the Institution of Electrical Engineers, told his members at their annual dinner.

“If this shocks you I would remind you that it was only three years ago that the Council of Engineering Institutions made a university pass degree or its equivalent a necessary part of the qualification of a chartered engineer.

“If we want higher status for our profession we must, in my view, raise the academic standard of qualification of the coming generation of professional engineers.”

Mr Booth, who is chairman of Yorkshire Electricity Board, said the common feature of high status professions—which include engineers in some countries—was a high standard of academic education.

“Here I think we are captives of our own history. In the early days of the industrial revolution our skilled engineers were mainly self-taught men of imagination who had an intuitive grasp of engineering principles”, he said.

Mr Alvin Boyarsky—school split over renewing his contract

Boyarsky furore threatens Architectural Association

The future of the Architectural Association's independent school in London may be in jeopardy following moves by the AA council not to renew the contract of Mr Alvin Boyarsky, the school's chairman, when it expires in September.

The council has declared that it is not in the “best interests” of the school for Mr Boyarsky, who was appointed in 1971, to remain. But the decision has been vigorously opposed by students, staff and administrators.

This week a special meeting of the school community indicated its firm support for Mr Boyarsky by calling for the establishment of an independent panel to renegotiate his contract, which, if Mr Boyarsky is to stay on after September, must be renewed by next Monday.

The 18-man council, which includes nine students and former students who are opposed to Mr Boyarsky, has also been warned that if it fails to condone the setting up of the independent panel the school will take direct steps to negotiate a new contract with the chairman.

Critics of Mr Boyarsky claim that the school's fees of £1,125 a year are too high and complain of the large proportion of overseas students among the student body. His supporters maintain that he has restored the school's international reputation.

Allegations of overspending have also been levelled at Mr Boyarsky. But he said this week: “The money has been spent on bringing up the school, which was almost closing in 1971, to its present level. It is now one of the best organized of its kind.”

Funds had been used to support students in need and a newly negotiated lease on the premises in Bedford Square now cost £70,000, instead of the previous £1,000, a year.

Take training ‘away from Law Society’

Articled clerks in London are urging that responsibility for the education and training of solicitors should be taken out of the hands of the Law Society and given to a newly established independent legal training board.

The 3,000-member London trainee solicitors' group has made the controversial plea in evidence to the Royal Commission on Legal Services. It is also calling for the abolition of the College of Law and arguing that solicitors' vocational training should take place exclusively in universities and polytechnics.

The group says: “We feel that the Law Society has proved itself to be incapable of looking after the interests of articled clerks. It has inadequately organized the system of articles and the existing examination system.”

It alleges that while the Law Society has floated ideas for the reconstruction of the training system in the past it has not been successful in persuading rank-and-file members to accept them.

Commenting on the present solicitors' examinations the group maintains that the College of Law's course provision at centres in Chester, Guildford and London, is outdated. Classes, it claims, are too large and should be entrusted to universities and polytechnics solely.

“The 24 universities and 19 polytechnics and technical colleges in England and Wales who in 1974 were running full time law degree courses have far more facilities and lecturers capable of bearing the burden of preparing 2,400 trainees for solicitors' examinations.”

Last year the Council of the Law Society postponed plans to make the profession all-graduate from 1980. It also decided to delay for one year the introduction of a new Common Professional Examination, to replace the present Part I, and a new final examination, to be offered instead of the Part II qualifying examination. Courses leading to the new examinations, whe introduced, will be offered by th College of Law and polytechnics.

The trainee solicitors now sa they are opposed to the professio becoming all-graduate. They al argue against the full-time colle attendance of students prepari for the Common Professional Exa ination, now likely to be introduc in 1978, but urge a compulsory o year course leading up to the fi examination, expected to start 1979.

April hearing for London Bill

London University's private Bill will be heard before a committee of the House of Lords on April 19 unless the points of difference between the university and the Association of University Teachers are resolved before that date.

At a meeting last week the university put forward certain proposals aimed at meeting some of the association's objections, now embodied in a petition before the Lords.

If the petition is not withdrawn the Bill's passage through Parliament will be greatly delayed, as a full hearing will have to take place. The onus will be on the university, not the petitioners, to argue the case.

The AUT is claiming that the Bill does not provide enough teacher representation on the university senate, and that convocation, the body of ex-students of the university, has an unwarranted status.

If passed, the Bill will enable the university to change its statutes.

Dundee students stay in NUS

Dundee University students voted 890-480 to remain affiliated to the National Union of Students (UK) in a referendum last week.

At Edinburgh representatives of St Andrews, Strathclyde and Edinburgh Universities, and Napier College of Science and Commerce, met to discuss the autonomy of Scottish students within the NUS.

The institutions represented are all disaffiliating from the union.

New marine centre

The Natural Environment Research Council has set up a new Marine Information and Advisory Service (MIAS) to deal with questions from any organization or private individual about the sea.

Based at the Institute of Oceanographic Sciences at Wormley, Surrey, it is an extension of the old British Oceanographic Data Service,

AUT embraces Scots council

The council of the Association of University Teachers (Scotland), meeting for the first time in five years decided at St Andrews on Saturday to embrace the principle of a Scottish higher education council. It will hold a special meeting later in the year to discuss its composition and functions.

Professor William Frend, of Glasgow University who was reelected unopposed as AUT(S) chairman, said the problem of Scottish education was a breakdown of communication between the different levels. A council would bring all sides together and defend education against arbitrary bureaucratic decisions, such as the proposed closure of four Scottish colleges of education.

The AUT(S) is also to press the national body to appoint a full-time official in Scotland for more frequent, and effective representation to government and the need for better liaison with other educational organizations. A suggestion that Scottish members should be willing to finance such an appointment rather than burden the national organization, was lost.

As a first step towards making universities more representative, the conference agreed that the courts be asked to appoint trade unionists either through the Scottish TUC or local trades councils. Dr George Hammersley, of Edinburgh University, said it was appropriate that, since the children of trade unionists formed such a large group of the students at universities, the unions should be involved in university government.

The academic staff also needed all the allies they could get at a time of cuts, he added. The AUT(S) is awaiting the outcome of its request to affiliate to the Scottish TUC—TESS.

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Blocking of mobility an 'international problem'

by David Walker

Building barriers against foreign students by increasing tuition fees created a dangerous immobility in the international academic community, a conference celebrating the 25th anniversary of the German Academic Exchange Service's work in this country was told last week.

The president of the service, Professor Hansgerd Schulte, regretted that Britain was not alone in building barriers. The Germans were interpreting their 8 per cent quota policy increasingly restrictively and the French now enforced "unduly rigorous language aptitude tests" for foreigners. Moves to restrict academic exchange were a result of the bureaucratization of intellectual life, Professor Schulte declared.

The outlook was gloomy. There were dangers of a relapse into provincialism in university life. Academics might come to long for the mobility their ancestors enjoyed when the medieval universities were at their peak.

However, the work of bodies such as the exchange service and the British Council could promote mobility. Its programme of bringing to this country younger students of English language and literature who are being trained to become teachers of English had been successful. What was needed, in addition, was a clear commitment to increased student mobility by the decision-makers.

"A clear and unambiguous political decision by the respective authorities in the national parliaments as well as in the supranational organizations is needed. The likelihood of such decisions being taken rests largely upon the initiative and resolute action of the European universities, and their firm opposition to an irretrievable drift into a deadly provincialism."

Professor Schulte's words were echoed by Herr Karl-Günther von Hase, the German Ambassador, shortly to leave Britain to become his country's representative with the European Commission in Brussels.

He praised the constitution of the German Exchange Service (DAAD) which enables it to receive public funds while remaining a self-governing institution dedicated to promoting academic interchange and mutual cooperation between countries.

The service was established in the 1920s as the mechanism to take charge of liaison between German higher education and institutions abroad. Reformed after the Second World War, its brief is to act on behalf of the German Federal Authorities, the Länder and its own member universities on matters concerning German culture abroad, international policy for secondary and tertiary education and educational aid to developing countries.

Probation period before training, lecturer urges

A radical proposal to reverse the order of teacher training for graduates is made in a recent issue of *The British Journal of Teacher Education.*

Mr R. L. Richer, of Stockwell College of Education, suggests that graduates wishing to teach should seek a probationary appointment in a school immediately after graduating. Four days a week on full unqualified pay would be spent in the school and the fifth day at a professional studies centre.

If this year were satisfactorily completed, the student would be selected for a course of initial training by a college or university department on the basis of the school's report and the advice of the professional tutor.

Mr Richer says his proposal would achieve the James report's insistence on the clarification of training objectives and it would give the profession more time to consult intending teachers.

"As the applicants would be more experienced, the selection procedure could concentrate on such dimensions as professionalism, personality and capacity to work with children of the particular age range."

If the pattern of postgraduate training were unified in this way the status split between different branches of initial higher education would be healed, since competence as a teacher would be the criterion of selection for the course.

Mr Richer's plan would mean the rundown of the BEd as an initial course of training. Instead, it could become the basic in-service degree for all post initial training.

Another result would be that the professional studies schools of the reorganized colleges would be able to extend research into the theory and practice of education. "The elements of a programme of this kind are already apparent in the reorganized colleges, particularly the development of combined degrees, in-service BEds and MAs."

The paper says that the Department of Education and Science is forecasting that graduates entering initial training will exceed the intake of non-graduates by 1978. This is a change which the James committee could not have foreseen. If it had, the paper suggests, it is reasonable to assume that the committee would have made considerable changes to its proposals for initial training.

The British Journal of Teacher Education is published three times a year by Methuen. It is available on subscription or at £4 a copy. Mr Richer's article is in Vol 2 No 3.

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Students forced into longer courses

by Judith Judd

Some polytechnic students are being forced to do four instead of two-year courses because they cannot get discretionary awards, Mr J. E. G. White, a lecturer at Wolverhampton Polytechnic, told a conference on modern language examination problems that cuts in awards were having "a ridiculous effect".

Lecturers were having to advise students who wanted to do two-year vocational courses such as secretarial/linguistic ones that they would have to do four-year courses to get grants. At the same time colleges were being asked to run more vocational courses.

Mr White also suggested that many career journals had played down too far the vocational value of modern languages in an attempt to disabuse them of the idea that they could all become world-class interpreters. Teachers should point to all the other jobs in which languages were important such as export management, engineering, technical sales, law and librarianship.

On the subject of examinations for linguists Mr White said the great problem was their number and variety. Polytechnics had to deal with all sorts of language examining bodies, all doing a good job within a limited range.

Some rationalization was necessary to bring the work of all these bodies and GCE O and A levels into a graded series of language tests from bottom to top.

Courses in polytechnics should show their "relevance" in a number of ways, through practical language courses, emphasis on language skills, compulsory residence abroad, and perhaps a non-literary rather than literary bias.

Mr C. Vaughan James of the Centre for Information on Language Teaching, defended A level. He said tinkering with it or abolishing it would not materially affect the uation of languages testing.

Traditional A level was one of the few indicators of standards. It might not be easy to say what A level meant but it was wrong to say that it did not mean anything at all. The problem with A level was not its own nature but the absence of an alternative.

Both educational and vocational elements were essential in school language courses. The popular idea that the less able the learner the more vocational should be his language course was illogical.

Acceptance of the organic separability of educational and vocational elements dictated the need for some redesign of courses at advanced levels.

The conference, at the Polytechnic of Central London, was attended by teachers, polytechnic lecturers and inspectors.

Ten asked to consider maths retraining

Ten institutions of higher education have been asked to consider running one-year retraining courses in mathematics.

Mrs Williams, Secretary of State for Education and Science, has asked the institutions to investigate the possibility of one-year courses for qualified teachers, including the newly qualified, who have been unable to get jobs.

The courses are intended for teachers who have not previously specialized in mathematics but have at least an A-level qualification in the subject. It is proposed that each course should take between 15 and 25 teachers in addition to the approved intake to initial teacher training courses.

In a letter to the principals of the polytechnics and colleges the Department of Education and Science says that, in designing courses, they should concentrate on extending teachers' knowledge of the subject, on the content of the mathematics taught to pupils of all abilities in the 11 to 16 age group and on contemporary teaching methods. There should be opportunities for school-based practical work.

The department acknowledges that authorities will not be able to second many serving teachers to the proposed courses and that the main source of recruitment will be newly qualified teachers who are at present unemployed and those returning to teaching after a break.

Mandatory awards will be available for newly qualified unemployed teachers. In other cases awards will be discretionary.

The institutions invited to take part are Sunderland Polytechnic, Sheffield City Polytechnic, St Martin's College of Education, Lancaster; City of Liverpool College of Higher Education, Trent Polytechnic, Nottingham, Homerton College, Cambridge, Bath College of Higher Education, West Sussex Institute of Higher Education, South Glamorgan Institute of Higher Education, Cardiff, North-East Wales Institute of Higher Education, Wrexham.

According to DES figures there was a shortage of 717 mathematics teachers in 1975 and 1,120 last year.

National insurance payments review

The Department of Health and Social Security is considering changes in the regulation concerning part-time lecturers and examiners and national insurance payments.

The change now being considered by the National Insurance Advisory Committee would mean a part-time teacher or lecturer who taught four or more days in three consecutive months would be treated as an employee.

An examiner would be treated as self employed if he were engaged on terms requiring him to finish the work under that engagement in less than 12 months, by a body responsible for conducting or administering an examination leading to a certificate, diploma, degree or professional qualification.

Greater union interest in manager training forecast

by Jane Feinmann

Management studies departments in polytechnics and colleges of further education will have to widen their perspectives over the next few years to incorporate the training of workers as well as managers, according to a Department of Education inspector.

Mr Jack Gold was speaking at a conference on management education organized by the United Kingdom standing conference of heads of management studies and the Association of Regional Management Centres in Luton.

He said even if there was no further government legislation as a result of the Bullock Report on industrial democracy, the trades union movement was already firmly committed to shop steward education and favoured the further education sector to implement its programme.

In 1966 there were only 21 union courses in which 260 shop stewards enrolled: last year there had been 122 involving 1,800 students. In the past two years the government had doubled its funding on union courses and the TUC expected to double the number in the next two years.

Mr Gold said that in spite of mutual suspicion, management studies departments would be expected to incorporate trade union studies units.

But the introduction of such courses was something quite new in education. The TUC reserved the right, for instance, to select colleges for these courses, where staff were felt to have the necessary experience. And it had introduced a new and very structured syllabus of packages and teacher notes ating from the TUC college, London.

The conference also discussed a discussion document on management development issued by the Training Services Agency in January. In it the TSA put forward "modest proposals for the agency to work with the education sector in improving training, while at the same time stressing that the TSA had no wish to "usurp the role of other bodies in the field of managment development."

Dr Ron Johnson, Director of Training, TSA, said the TSA had no wish to barge into an area where there were already many other institutions at work. But the Manpower Services Commission, under whose authority the TSA operates, regarded management development as a national priority.

The training department of the TSA was currently concerned with defining learning objectives and with checking on their efficiency.

Copies of the documents can be obtained from the TSA at Regent Street, London W1R and comments on it are welcome before April 11.

A searching analysis of management development training came later last week at a conference in London organized by the Association of Teachers of Management.

Calling for a wider dissemination of the teaching of managerial skills to combat "British economic illiteracy", Professor Charles Handy of the London Business School said that most European countries had no need for their managers to undergo special training. Most were taught maths, statistics, and social psychology as a matter of course.

Decision on policy studies deferred

The research initiatives board of the Social Science Research Council has decided to defer making a formal recommendation on the SSRC role in policy studies until the early summer.

It received a report from Mr Derek Robinson, the SSRC chairman, and two fellow members of the board, on existing policy study work in Britain and the United States, and considered various proposals for development of this area, such as those from Professor Ralf Dahrendorf, director of the London School of Economics, and Professors Maurice Kogan and Peter Hall of Brunel and Reading Universities respectively.

It is understood the board wants to treat the policy studies question cautiously.

● The National Institute of Economic and Social Research is to sponsor a series of conferences on economic policy, starting in December with a meeting on demand management. It has received a grant from the Nuffield Foundation

Stirling holidays pay

Stirling University earned more from its conference and holiday trade last summer than any of the other 36 universities in the British Universities Accommodation Consortium. The net income remaining from vacation letting was about £75,000.

Engineering for sixth formers

A booklet for universities and polytechnics seeking new ways to present engineering to sixth-formers has been published by PETT (Project: Engineers and Technologists for Tomorrow). It describes last summer's King's College workshop which introduced 42 pupils to engineering in both higher education and industry over a week.

PETT, a government-backed consortium to promote engineering and technology in schools, hopes that the exercise at King's College London will inspire other institutions to introduce similar workshops. "Perhaps we have so far concentrated on improving links between industry and higher education and schools, that we have paid too little attention to the third side of the triangle—closer cooperation between higher education and the schools", said PETT chairman, Mr Ronald Fall.

The booklet can be obtained from the PETT office at the Department of Industry, John Islip Street, London SW1P 4LN.

Culham head for Sussex

Mr John Wyatt, principal of Culham College of Education, Abingdon, has been appointed first director of West Sussex Institute of Higher Education, which incorporates Bishop Otter and Bognor Regis colleges. He will take up his appointment in September.

On the other hand

The ascent of J.K.

At last a chance to see J. K. Galbraith without all those visuals that illustrate his every comment in the television series. (For instance, if he says "Good evening" you tend to get shepherds waving at you and children playing happily by the hearth and contented choral noises as larks wing homeward.)

I followed him dutifully round a launching party for his book of the series, *The Age of Uncertainty*, to pick up bon mots and epigrams. At six foot eight he is probably the tallest democratic thinker of our time and stands with a slightly apologetic stoop. "Good morning", he said. Not a shepherd moved.

However, I must report that I am none too keen on being his Boswell. Notebook poised, you get the beginning of some trenchant crack groping its way towards the *Oxford Book of Quotations* only to watch it get diverted by some latter-day man from Porlock who interrupts his train of thought.

For instance, I asked him what it was like being a cult figure and how I could become one. "Well", he replied, working up something really bright, "fame is like. . . ." Suddenly a panic of journalists, having finished all the smoked salmon sandwiches and swallowed as much free alcohol as is medically possible before 11.30 am interrupted to ask a selection of the stereotyped questions which help to make our newspapers so boring to read. ("Do you know Joe Haines?" That class of inquiry.)

"It is not entirely true to say . . .", but he did not finish that either. Shirley Williams the education minister and arguably the shortest democratic thinker of our time was hovering somewhere around his knees waiting to greet the intellectual alp.

"I did enjoy the series", she said, giving comfort to those of us who worry that a Cabinet minister's small talk might be more inspiring than yours or mine. The alp made a truncated reply before the newshounds moved back in with more of their silliness ("Do you know Marcia Williams?", that class of inquiry), while the other Mrs Williams retreated to the foothills of those shorter economic strategists, Lords Balogh and Kaldor.

An hour later he was autographing copies of his book. "What shall I write on this for Balogh", he mused. I am prepared to wager he put: "Best wishes J. K. Galb . . . no Mr Grapgrote I don't believe we have met."

Tolkienfest

Another drawback to being a cult figure is all the bizarre fan mail you have to answer, as the current exhibition of Tolkien drawings and manuscripts at the National Book League shows. One exhibit is a lengthy letter from the author and former Oxford professor of philology to a Miss Sherring who had found his schoolboy copy of the Fifth Book of Thucydides and written to tell him so.

Yes, replied the inventor of Gandalf's garden, "the book certainly once belonged to me though I have no recollection of ever selling it". What gave the game away was his habit of inscribing books "Raginwaldus Dwalakoneis" which is a gothicization of his name. In this and other details he shows himself a philologist at heart, particularly in the lengthy passage of that letter where he itemizes the interrelation between the languages of the Greeks and the Goths.

But his talents did not stop there. The exhibition includes many ink and watercolour works which show that he could not only imagine a whole world and give it a new language, but also illustrate it. The meticulously drawn and brightly coloured sketches were initially done for his own amusement and only later did his publishers discover them.

The only creative sphere he did not explore was music, although even here he was peripherally involved. He collaborated on songs with the composer Michael Swann, known for popular melodies concerning gnus and gasmen. "We worked together on some of the songs which appear in his work. I was fascinated by him as a writer from the very beginning. I am convinced that his work will last and this exhibition celebrates a new aspect of it."

It is being held at the NBL headquarters at 7 Albemarle Street, London, until April 7 and is open 10 am to 6 pm on weekdays and 10 am to 4 pm on Saturdays.

Democracy just about works at Bradford College of Education where a regional session of the great debate was held recently. The night before it was due to start the organizers realized there was not a single immigrant among the 200 delegates, although they make up 10 per cent of the city's population. So Eric Robinson, the college principal, sent out a member of staff to round up four such. Sadly, two declined, preferring to join the demonstration outside; one agreed, but was not actually seen; and the fourth left after lunch.

Bore war victors

Not all novelties wear off. Some, like Leeds University's most boring lecturer of the year contest, join the Boat Race and the Chancellor's eyebrows as national institutions, cherished ever more with the passing years.

Last week's contest was the third and they are clearly getting it down to a fine art. Lights were dimmed in the lecture hall to aid sleep and lullabies introduced the pyjama-clad master of ceremonies, René-James Hérail, a lecturer in French who clutched an immense teddy and had an endearing gleam in his eye only just this side of fruitcake.

The trouble was that the lectures were not boring, more an absolute scream. The only really boring person there was a magnificently po-faced porter (whose importance could be judged from the amount of gold braid around his jacket) who from time to time leaned imperiously against the dais and told the capacity audience not to block the aisles.

At first everyone thought he was sending up petty officialdom and cheered good-humouredly. The second time he was booed off and left in no doubt that he fell into that category of minor tyrant which would be recycled after the revolution and used for trampling grapes. "S'not ma fault", he shouted defiantly into the baying, howling mob, "S'fire reggylations".

My favourite lecture was by a medic who talked about limb confusion and incorrect amputations. He tried to teach us how to differentiate between right and left, on such occasions by showing four identical slides of the same billiard ball viewed from different angles.

The eventual winner of the Golden Pillow award for the second year running was Dr David Coward, also from the French department, who spoke on "the problem of the manned urinal" and afterwards told reporters that he challenged the world to be more boring than he was. "We would like to hold a national contest with other universities and then perhaps get the Americans in." Now that is a meeting I would dearly love to see.

Bookmaker (4)

I shall now show how to write insensitive people in your university novel. It is very important to have at least one character who has not the faintest clue what is going on ("What, Ralph and Tania having an affair? Since when? *Three years ago?*") since your reader, also lost in the hopeless complexity of your plot, will find him comforting. We shall call him "Ron", a lecturer in aeronautical engineering.

One resultant joy is that you can now have conversations between him and the sensitive characters described last time (*THES* February 25). Like the following:

Ron: What did you do in your holidays, Jocasta?

Sensitive person: Oh I married an exiled African Marxist, helped his family escape from a civil war, discovered I was gay, ran off with a Finnish light opera singer called "Tonnengrillde", tried to kill myself with a car jack and set up a ying commune devoted to Tai Chi and new ways of breathing. What did you do, Ron?

Ron: I went to the boat show.

Ron: interrupted Yehudi Menuhin to search for mislaid cufflink.

Another profitable tack is to have Jocasta ask Ron if he has ever done any self-expressive dancing, and listen in disbelief as he outlines his early experience of the Gay Gordons at Ryde Golf Club socials.

In my novel Ron has married Dr Romola Greete, the best-selling feminist author of *Spread Yourself About A Bit.* (London reviewers agreed: "Greete is immediate, defiant, scaldingly intelligent and, thank God, lives in north Yorkshire"). They now have an extended family which means there are a lot of people in Ron's house who are nothing whatever to do with Ron. We join them early one evening in the sitting room after he has talked her into spending a quiet night at home flicking through back numbers of *Flight.*

"Look dear, a De Havilland Moth", he said affectionately. Romola snorted coldly. Not since the days of Rabelais had anyone so daring and courageous poured scorn upon the fuel tank capacities of the swing-wing biplane.

Suddenly Ron—who is the sort of man who would interrupt a Yehudi Menuhin lecture to search for mislaid cufflinks—heard a noise in the kitchen. He turned and saw 11 men in peaked caps trudge past the cooker.

"Who are they?", he asked.

"Purton cricket team", replied his wife.

"You don't know Purton cricket team."

Romola toyed with her chilled cumquats (which are incidentally a Chinese fruit and not a range of hills near the Cotswolds).

"Where are they staying Romola?"

"My room."

Ron looked at his wife in a manner which suggested that until such time as the female psyche was mounted on a 60 foot wing span and flown across the Atlantic he would not understand it.

"Why did you marry me?"

"For my next book", she said, trying to dislodge pieces of fruit from her back teeth.

"And how do you suppose that makes me feel?" asked Ron.

"Pretty dreadful."

At this point our hero, Gavin knocks at the door, and all you have to do (I cannot do everything for you) is write in enough credible doorstep hankey pankey to convince your reader that Gavin will soon be savouring life in a family extended to include Ron, Romola, Purton cricket team, four illiterate children who paint beautifully, an old Chinaman who once sold Jerbils in Tottenham Court Road but is now heavily into horizontalism, and a folk singer who is too sensitive to work but not to crack those witless jokes of which only folk singers seem capable.

William Grant and Sons, the Scotch whisky distillers, are to give a Glenfiddich Research Fellowship in Scottish history at St Andrews University. Mr David Grant, the marketing director, explained: "Malt whisky is the product of centuries of tradition and we hope the Glenfiddich fellow will increase understanding of Scotland's heritage and of the factors which have moulded our national character." No comment. Cheers.

Increase poly's role 'as bridge with industry'

by Sue Reid

Polytechnics play a vital role in providing a bridge between industry and education which could be expanded, Mr Leslie Huckfield, parliamentary under secretary of state at the Department of Industry, told the London conference on the relationship between the polytechnics, industry and commerce, last week.

He said that polytechnics were in a unique position to confer with educationists and industrialists and called for the establishment of a "clearing house" within the polytechnics for the exchange of information between schools and factories.

In the current academic year there were 27,000 empty places on science and technology courses in colleges and universities but if the number of able applicants had continued to grow in the early 1970s and successive Governments had provided the relevant resources there would now be more well-qualified engineers and technologists.

Mr Huckfield added: "There is still capacity in the universities and polytechnics to take in more students in science and technology to meet the needs of industry. We need more of the right people applying."

A survey in May, 1976, had shown that only 24 per cent of final year students wanted to enter industry or business. Of those who were likely to gain first-class degrees only 21 per cent were interested in industrial careers.

Mr Huckfield suggested that Britain should reconsider the policy of allowing students to pursue the subjects of their first choice. He posed the possibility of moving over to a policy of more guided choice so that the needs of the country and its manufacturing base were given more prominence.

"When we turn out eight sociologists and nine historians to every one production engineer from our universities and polytechnics something is very wrong with our higher educational priorities. Without more production and manufacturing we cannot afford more sociologists and historians.

"The need of our country at the moment is for educators and industrialists to get together. Industry can help teachers of mathematics and science to relate to industrial problems. Through this kind of liaison the importance of manufacturing and the wealth-creating role of industry can be underlined."

Earlier in the conference, attended by polytechnic representatives and industrialists, Mrs Williams, the Secretary of State for Education, mooted the possibility of the Government introducing industrial scholarships to encourage specialization in science and technology.

She said: "There is an urgent need to attract more of our most able students into science and engineering courses, particularly those with a vocational bias.

"We must identify industry's needs and how best to meet them. We must encourage more young people to aim for a career in the wealth-producing industries on which this country's future so largely depends."

New King's charter will be wasteful, Privy Council told

Proposals before the Privy Council to give King's College, London, a new charter have been attacked as sectarian and wasteful of public money by one of the college's senior academics.

Professor Hywel Lewis of the department of the history and philosophy of religion has complained to the Privy Council that the new college charter would involve religious favouritism. It would provide University Grants Committee money for the benefit of the Anglican Church, he says.

It discriminated against Methodists and Baptists and supported Anglican theological training in one place when the Church of England was perfectly capable of looking after its own elsewhere.

At issue is the incorporation into Kings College of its theological department. Despite its name, since 1910 this has been a separate organization devoted mainly to training ordinands for the Anglican ministry but linked to King's through the college's own research and teaching in religious studies, the person of the college dean who heads the theological department, and the Anglican colouring of King's staff and students.

Following recommendations made in the Murray Report on London University, and what the college dean, the Rev S. H. Evans, calls the "organic growth" of the theological department into King's proper, the new charter for King's proposes the department's staff should be absorbed into its faculty of theology which is organized on a non-denominational basis.

The theological department's private funding from Church of England sources would cease as its teachers became a college and a UGC responsibility. The Rev Evans would continue as dean but his salary, for a quasi-ecclesiastical office, would be found from private funds.

The college view is that its new theological faculty would be entirely non-denominational in the sense no religious tests would be applied to students or staff. Professor Lewis disagrees, arguing the absorption of the theological department represents a subsidy to Anglicanism, and to be fair, such a subsidy ought to be extended to various non-conformist training colleges.

The last picture course

Spending cuts have forced the Slade School of Fine Art at University College London to close its postgraduate diploma course in film studies from next year.

The full extent of the cuts needed are not yet known, but Professor Lawrence Gowing, head of the Slade, feels that the high cost of the course is harming other activities which have been reduced to pay for it.

"It is a tragedy that the course should be in question", he said, "but it would also be a tragedy if the work of the Slade was sterilized, as it would be by any further cuts. Supporting the course until June, 1978, has already meant cutting expenditure on fine arts to a drastic level."

He added that the course contained only 7 per cent of the school's students but cornered 26 per cent of the cash.

The study of cinema began at the Slade in 1960 and the two-year taught diploma course was set up in 1967. In addition MPhil and PhD work has been carried out from the beginning and is to continue.

The diploma course involves research and a large programme of screenings and seminars which are examined by written papers. It comprises a study of film history and theory as well as an in-depth exploration of various historical and theoretical topics.

The decision to end the course has angered Dr James Leahy, director of film studies at the Slade, who foresees a bleak future for the subject in the United Kingdom. "It is likely to have a demoralizing effect on students and teachers at every level in film education in this country", he said.

The course has gained an international reputation and its closure will mean that undergraduates studying film will only be able to carry out higher level work on their own.

Representations against the closure have already been made by several bodies such as the British Film Institute and the National Film School who feel that film studies are threatened.

NOTICE BOARD

Chairs

Dr Michael Disney, principal research fellow in astronomy at the Royal Greenwich Observatory, has been appointed to the chair of theoretical astronomy in the department of applied mathematics and astronomy at University College, Cardiff.

Dr Angus Easson, lecturer in the department of English at Royal Holloway College, London, has been appointed the first professor of English at Salford University. He will take up his new appointment, which is based in the university's department of modern languages, on September 1.

Professor Thomas Craik, professor of English at Dundee University, has been appointed to a chair of English at Durham University with effect from October 1.

Professor John Harris, professor of Egyptology at Copenhagen University, has been appointed professor of Egyptology and director of the School of Oriental Studies at Durham University with effect from October 1.

Dr Malcolm Jayson, senior lecturer in medicine (rheumatic diseases) at Bristol University and honorary consultant to Bristol Royal Infirmary, the Royal National Hospital for Rheumatic Diseases and the Bath and Winford Orthopaedic Hospital, has been appointed professor of rheumatology at Manchester University. He succeeds Professor J. H. Kellgren.

Forthcoming events

"Censorship", a series of weekly meetings designed to discuss the constraints and limitations imposed by the law, society and the state on cultural activities, will be held from March 10 until June 2 at the Institute of Contemporary Arts, London. The first four meetings are: "The Press: is the law the best censor?", "Is the Press too important to be left to journalists?", "Problems facing publishers", and "Liberty in the visual arts—is it a delusion?".

Appointments

Universities

Liverpool
Senior lecturers: E. M. E. Poskitt (child health); M. W. Service (medical entomology). Lecturers: E. A. Danbury (Medieval history); L. Brydon and P. A. Roberts (social anthropology). Temporary lecturer: M. M. Kamel (anaesthesia). Promotion to assistant director: N. Shone (social work education division, Institute of extension studies).

London
Institute of Historical Research
Editor, *Victoria History of the Counties of England*: C. R. Elrington.

Loughborough
Promotions to senior lecturer: J. I. Anderson (management studies); Dr J. Atha (human sciences); N. W. Beswick (library and information studies); Dr G. K. Creighton (electronic and electrical engineering); J. R. Frears (European studies); C. Hepburn (polymer technology); L. R. Mustoe (engineering mathematics); Dr R. J. Stretton (chemistry).

Newcastle
Dean of dentistry: Professor Roy Storer. Lecturers: J. M. Bray (geography); A. D. Collier (architecture). Temporary lecturer: A. B. Heath (medical statistics).

Sheffield
Senior lecturer: J. L. Maddocks (pharmacology and therapeutics). Lecturers: D. D. Gilbertson (prehistory and archaeology); D. R. Phillips and L. D. Richardson (sociological studies); P. Redgrave (psychology); P. E. Sudbery (genetics); L. I. Costa (geology). Temporary lecturer: P. L. R. Andrews (physiology). Part-time lecturer: P. M. Anson (law). Part-time temporary lecturer: A. O. Perriman (clinical dentistry). Part-time honorary clinical lecturers: T. F. Fannin (surgery); A. Kennedy (pathology); E. G. Herzog (orthopaedics). Part-time honorary clinical tutors: I. F. V. Fussey and S. F. Tindall (surgery).

UMIST
Lecturer: D. J. Ling (civil and structural engineering). Honorary fellows: Sir Ralph Bateman, chairman of Turner & Newall Ltd, and former president of the Confederation of British Industry; Professor W. E. Morton, lately professor of textile technology at the Institute; Mr G. N. Hounsfield, FRS, head of the medical systems section of EMI central research laboratories; Mr Joss Naylor, of Wasdale, Cumbria, the champion fell runner.

Polytechnics

Brighton
Head, department of finance and accountancy: Mr R. Nunns.

Manchester
Head, department of chemistry: Dr P. J. Robinson.

Honorary degrees

Bath
The following will be awarded honorary degrees in July:
LLD: Mr William Rees-Mogg, editor of *The Times*.
DSc: Professor Ralf Dahrendorf, director of the London School of Economics and Political Science; Sir Monty Finniston, chairman of the British Steel Corporation; Sir Alexander Merrison, vice-chancellor of the university of Bristol; Sir Charles Oatley, emeritus professor of electrical engineering, Cambridge University; Sir Robert Williams, director of the Public Health Laboratory Service.
MA: Mr Robin Tanner, art educationist, etcher and leading member of the Craft Study Centre Trust.

Grants

Belfast
Mechanical and industrial engineering—£20,000 from De Beers Industrial Diamond Division Ltd. for continued research on "Properties of tungsten carbide under complex stress at temperatures up to 600°C", under the direction of Professor B. Crossland.
Geriatric Medicine—£10,601 from the British Heart Foundation for research on "Hormone and lipoprotein control of lipoid metabolism in cultured arterial smooth muscle cells in relation to atherosclerosis", under the direction of Professor R. W. Stout.

Birmingham
Space research—£214,804 from the SRC for a hard X-ray imaging spectrometer for SMM to Professor A. P. Willmore and Dr G. M. Simnett.
Physics—£64,914 for nuclear structure exploitation 1977-78 to Professor G. C. Morrison.
Electronic and electrical engineering—£11,351 from the Post Office to study the effect of imperfections in quasi-synchronous transmission systems on error rates in digital systems and the improvement obtainable using time-diversity transmissions under the direction of Mr J. D. Parsons.
Physiology—£2,276 from the MRC to study the role of sympathetic nervous system in the control of cerebral circulation under the direction of Dr O. Hudlicka.
Social medicine—£8,856 from the MRC for a pilot study of tooth lead levels under the direction of Dr H. A. Waldron; £5,454 from the Cancer Research Campaign for epidemiological study of the incidence of multiple primary cancer under the direction of Dr J. A. H. Waterhouse.
Dental health—£4,750 from the MRC for studying oral conditions in relation to trace elements in human tissues and the environment under the direction of Professor P. M. C. James.
Institute of local government studies—£2,544 from the Department of the Environment for research into [illegible] tional futures for planning policy [illegible] the direction of Professor J. Stewart.
Anatomy—£14,511 from the W[illegible] Health Organization for a study of [illegible] effect of progesterone and [illegible] terone on the inhibition of ovul[illegible] when administered intravenously [illegible] mal female rhesus monkeys, under [illegible] direction of Professor J. T. Eayrs.
Physical metallurgy—£3,020 from [illegible] Ministry of Defence for constitu[illegible] and magnetic studies of mixed fluo[illegible] and oxides under the direction of [illegible] I. R. Harris.
Transportation and environmental p[illegible] ning—£12,054 for a study of pedes[illegible] injuries and their origins under [illegible] direction of J. Kilbuszewski.
Surgery—£4,349 from the Cancer [illegible] search Campaign for development [illegible] immunological methods in the [illegible] ment of cancer under the direction [illegible] Mr A. D. Barnes.
Oral pathology—£6,721 from the [illegible] gamated Dental Co Ltd for biol[illegible] testing under the direction of [illegible] sor E. A. Marsland.
Russian and East European stu[illegible] £9,055 from the SSRC for a soci[illegible] academic history of USSR during [illegible] dustrialization under Professor [illegible] Davies and Dr M. Lewin.

Glasgow
Building services research unit—[illegible] from the Department of Health [illegible] Social Security for the evaluation [illegible] energy-saving devices in mech[illegible] ventilation and air conditioning [illegible] the direction of Mr W. Carson.
Botany—£12,508 from the Na[illegible] Environment Research Council [illegible] comparative environmental phys[illegible] of alder: growth and nutrition [illegible] the direction of Dr C. J. Wheeler.

Noticeboard is compiled by Patricia Santinelli and Pauline Gamble

Open University programmes March 12 to March 18

Saturday March 12

BBC 2
7.40 People and Organizations: BBC Interview (2) (DT352; prog 2).
8.05 Making Sense of Society: Guernsey: Land and Water (D101; prog 5).
8.30 The Man-Made World: A foundation course: Control (T100; prog 16).
8.55* Environmental Control and Public Health: Clean Air Success (PT272; prog 1).
9.20 Topics in Pure Mathematics: The First Isomorphism Theorem (M202; prog 6).
9.45 Mathematics Foundation Course: Using the ASR33 Computer Terminal (M100; prog C1).
10.10 The Digital Computer: Data Processing in Action (TM221; prog 1).
10.35 Integration and Normed Spaces: Line (M331; prog 2).
11.00* The Nature of Chemistry: Colour Photography (S304; prog 17).
11.25* Images and Information: Beyond the Eye (ST291; prog 2).
11.50 An Introduction to the Chemistry of Carbon Compounds: Carbon-Hydrogen, Carbon-Halogen Bonds (S24-; prog 3).
12.15* Technology for Teachers: Case Study: A Structured Course (PET 271; prog 2).
12.40 Historical Data and the Social Sciences: From Time to Time (D301; prog 2).
13.05 Linear Mathematics: Invariant Subspaces (M201; prog 5).
13.30 Microeconomics: Demand and Supply: Food Prices and Farmers (D222; prog 2).

RADIO 3 (VHF)
6.05 Drama: Interpreting the Classics (A307; prog 4).
6.25 Systems Modelling: Linear Programming: A Case Study (T341; prog 2).
6.45 Mathematics Foundation Course: Revision (M100; prog 5).
7.10 Arts Foundation Course: Assessing Secondary Sources Logic: Logic and Philosophy (A100; prog 7).
7.35 Science Foundation Course: Water: An Eccentric Liquid: Supplementary Material (S100; prog 5).

RADIO 4 (VHF)
Excluding programmes for north Scotland and Welsh transmitters
9.05 Open Forum—6
9.20* History of Architecture and Design 1890-1939: Tony Garnier: La Cité Industrielle (A305; prog 5).
9.40* The Age of Revolutions: T. S. Ashton and the Industrial Revolution (A202; prog 5).
10.00* Personality and Learning: Freud and Ibsen (E201; prog 3).
10.20* Twentieth-Century Poetry: The Real Language of Men (A306; prog 2).
10.40* Modern Art from 1848 to the Present: Styles and Social Implications Images of Reality (A351; prog 2).
11.00* Decision Making in Britain: Governing Britain (D203; prog 4).
11.20* History of Mathematics: The Diffusion of Numbers (AM289; prog 2).
11.40* Social Psychology: The Biological and the Social (D305; prog 2).
14.00* Renaissance and Reformation: Petrarch (A201; prog 5).
14.20* Earth Science Topics and Methods: Consensus in Sea Floor Spreading (S333; prog 2).
14.40* The Sociological Perspective: The Sociological Tradition (D283; prog 2).
15.00* War and Society: History and Sociology in the Study of War (A301; prog 1).
15.20* Curriculum Design and Development: Tanzania: Education for Self-Reliance, Part 1 (E203; prog 3).
15.40* Urban Development: Development at Oke Seni: A Case Study (DT201; prog 4).
16.00* Industrial Relations: The Interested Parties (P881; prog 11).
16.20* Decision Making in Britain: Down with Equality (D302; prog 4).
16.40 Language and Learning: Corruption and Correctness (E262; prog 2).

RADIO 3 (VHF)
Replacement programmes for north Scotland and parts of Wales
24.00* Twentieth-Century Poetry: The Real Language of Men (A306; prog 2).
00.30* Modern Art from 1848 to the Present: Styles and Social Implications: Images of Reality (A351; prog 2).
00.40* History of Mathematics: The Diffusion of Numbers (AM289; prog 2).

Sunday March 13

BBC 2
7.40 Arts Foundation Course: The Historian at Work (A100; prog 7).
8.05 Science Foundation Course: States of Matter (S100; prog 5).
8.30* Mathematics Foundation Course Approximating Functions (M100; prog 4).
8.55* Electromagnetics and Electronics: Flux and Magnetic Circuits (TS282; prog 3).
9.20 Biological Bases of Behaviour: Invertebrate Nervous System and Behaviour (SDT286; prog 3).
9.45 Arts Foundation Course: Introduction to Logic (A100; programme Logic).
10.10* The Age of Revolutions: The Terror (A202; prog 2).
10.35* Personality and Learning: Rosmersholm: "Dream-Work" (E201; prog 2).
11.00 Mass Communication and Society: A Mirror Held up to Reality (DE353; prog 1).
11.25 Elements of Music: Score Reading (A241; prog 1).
11.50 Open Forum—16: The Open University's International Connections.
12.15* Fundamentals of Human Geography: Land Use Change in Southern Ontario (D204; prog 2).
12.40* Curriculum Design and Development: Tanzania: Education for Self Reliance (1) (E203; prog 2).
1.05* Urban Education: Chicago (E351; prog 1).
13.30 Science and the Rise of Technology since 1800: A Pattern of Scientific Discovery (AST291; prog 1).

RADIO 3 (VHF)
6.00 Integration and Normed Spaces: The Integral of a Step Function (M331; prog 3).
6.20 Decision Making in British Education Systems: Cuts in Education Expenditure (E221; prog 3).
6.40 OU Announcements.
7.00 Making Sense of Society: Was Malthus Right? (D101; prog 5).
7.20 Elements of Music: An Introduction to Aural Training (1) (A241; prog 3).
7.40 Technology Foundation Course: Automation (T100; prog 16).

RADIO 4 (VHF)
9.10 National Income and Economic Policy: The Problem of Price Changes (D282; prog 3).
9.30 The Early Roman Empire and the Rise of Christianity: Roman Law and the Eastern Empire, No 1 the Trials of Paul (A291; prog 3).
9.50 International Politics and Foreign Policy: Preparing for the Extended Essay (D332; prog 1).
10.10 The Digital Computer: An Introduction to the Course (TM221; prog 1).

RADIO 3 (VHF)
24.00* The Age of Revolutions: T. S. Ashton and the Industrial Revolution (A202; prog 5).
00.20* Renaissance and Reformation: Petrarch (A201; prog 5).
00.40* History of Architecture and Design 1890-1939: Tony Garnier: La Cité Industrielle (A305; prog 5).

Monday March 14

BBC 1
6.40 Solids, Liquids and Gases: The Interatomic Forces (ST285; prog 2).
7.05* Integration and Normed Spaces: Line (M331; prog 2).
7.30 Social Psychology: Social Psychology Laboratory (D305; prog 10).

BBC 2
6.40* The Digital Computer: Data Processing in Action (TM221; prog 1).
7.05* Ecology: Esthwaite and the Blelham Tubes (S323; prog 3).
7.30 Quantum Theory and Atomic Structure: The Experimental Foundations (SM351; prog 1).
16.55* An Introduction to the Chemistry of Carbon Compounds: Carbon-hydrogen, Carbon-halogen Bonds (S24-; prog 3).
17.20* Statistics: An Interdisciplinary Approach: The Binomial Distribution (MDT241; prog 3).
17.45 Genetics: Past, Present and Future (S299; prog 1).
18.10 Mathematics Foundation Course: The Difference Operator (M100; prog 5).
18.35* Technology Foundation Course: Control (T100; prog 16).

RADIO 3 (VHF)
6.00 Personality and Learning: Personality Assessment: The Single Case (E201; prog 4).
6.20 The Nineteenth-century Novel and its Legacy: The Nature of "Wuthering Heights" (A302; prog 3).
6.40 The Development of Instruments and their Music: The Influence of Corelli (A304; prog 3).
17.45* Language and Learning: Corruption and Correctness (E262; prog 2).
18.05* Open Forum—6
18.25* Systems Modelling: Linear Programming—A Case Study (T341; prog 2).
18.45 Public Administration: Administrative Change in the 20th Century (D331; prog 2).
19.10* Making Sense of Society: Was Malthus Right? (D101; prog 5).

Replacement programmes for north Scotland and parts of Wales
24.00* Decision Making in Britain: Governing Britain (D203; prog 4).
00.20* Earth Science Topics and Methods: Consensus in Sea Floor Spreading (S333; prog 2).
00.40* War and Society: History and Sociology in the Study of War (A301; prog 1).

Tuesday March 15

BBC 1
6.40 An Introduction to Materials Crystals (TS251; prog 17).
7.05* Mathematics Foundation Course: Using the ASR33 Computer Terminal (M100; prog C1).
7.30 Analysis: Continuous Functions (M231; prog 3).

BBC 2
6.40* Biological Bases of Behaviour: Invertebrate Nervous System and Behaviour (SDT286; prog 3).
7.05 Modelling by Mathematics: Crossing by Numbers (TM281; prog 2).
7.30 English Urban History 1500-1780: The European City (A322; prog 2).
16.55* People and Organizations: BBC Interview (2) (DT352; prog 2).
17.20 Physiology of Cells and Organisms: Active Transport (S321; prog 3).
17.45* Quantum Theory and Atomic Structure: The Experimental Foundations (SM351; prog 1).
18.10 Systems Performance: Human Factors and Systems Failures: Flight Failures (TD342; prog 3).
18.35* Science Foundation Course: States of Matter (S100; prog 5).

RADIO 3 (VHF)
6.00 An Introduction to Psychology: The Introspectionists ([illegible]; prog 3).
6.20 Science and Rise of Technology since 1800: Science in the French Revolution (AST291; prog 2).
6.40 Patterns of Inequality: Taxation—Reform or Revolution (D302; prog 6).
17.45 Education, Economy and Policy: Smith's Model II (E353; prog 2).
18.05 Problems of Philosophy: Personal Identity (A303; prog 3).
18.25* Elements of Music: An Introduction to Aural Training (1) (A241; prog 3).
18.45* Drama: Interpreting the Classics (A307; prog 4).
19.05* Arts Foundation Course: Assessing Secondary Sources. Logic: Logic and Philosophy (A100; prog 7).

Replacement programmes for north Scotland and parts of Wales
24.00* Social Psychology: The Biological and the Social (D305; prog 2).
00.30* Urban Development: Development at Oke Seni: A Case Study (DT201; prog 4).
00.40* Curriculum Design and Development: Tanzania—Education for Self-Reliance Part 1 (E203; prog 2).

Wednesday March 16

BBC 1
6.40 Systems Behaviour: Simulation Modelling (T241; prog 2).
7.05 The Handicapped Person in the Community: Scenes from "A Day in Death of Joe Egg" ([illegible]; prog 2).
7.30 Telecommunications Systems: Multiplexing (T321; prog 3).

BBC 2
6.40* Genetics: Past, Present and Future (S299; prog 1).
7.05 Open Forum—6: Open Forum on Assignments.
7.30 The Early Roman Empire and the Rise of Christianity: The Image of Empire (A291; prog 2).
16.55 Mechanics and Applied Calculus: Newton's Laws ([illegible]; prog [illegible]).
17.20 Twentieth-Century Poetry: "Make it New . . .": The Visual Arts (A306; prog 3).
17.45* Management in Education: Stoney Stringer: A Case Study in Management, I (E321; prog 1).
18.10* People and Work: Iron (DE351; prog 1).
18.35* Arts Foundation Course: The Historian at Work (A100; prog 7).

RADIO 3 (VHF)
6.00 Urban Education: Chicago Schools (E351; prog 2).
6.20 OU Announcements and Music I-II.
6.40 People and Work: B.S.C. Strategy (DE351; prog 2).
17.45 Environmental Control and Public Health: Desalination—Yes or No (PT272; prog 2).
18.05 Decision Making in Britain: Using Broadcasts as a Source I (D203; prog 6).
18.25* Computing and Computers: Introducing the Course (PM951; prog 1).
18.45* Biochemistry and Molecular Biology: Biochemists and Biochemistry (S322; prog 1).
17.05* Mathematics Foundation Course: Revision (M100; prog 5).

Replacement programmes for north Scotland and parts of Wales
24.00* Industrial Relations: The Interested Parties (P881; prog 11).
00.20* Patterns of Inequality: Taxation—Reform or Revolution (D302; prog 6).
00.40* Language and Learning: Corruption and Correctness (E262; prog 2).

Thursday March 17

BBC 1
6.40 The Revolutions of 1848: The Media of 1848 (A321; prog 2).
7.05* Mass Communications and Society: A Mirror Held Up to Reality (DE353; prog 1).
7.30* Elements of Music: Score Reading (A241; prog 1).

BBC 2
6.40 Methods of Educational Enquiry: An Empirical Approach: Project ([illegible]; prog 3).
7.05 Biochemistry and Molecular Biology: Carbohydrates (S322; prog 2).
7.30 Fundamentals of Statistical Inference: Probability Models ([illegible]; prog 1).
16.55 Decision Making in Britain: Case Study: Beyond [illegible] ([illegible]; prog 3).
17.20* Systems Behaviour: Simulation Modelling (T241; prog 2).
17.45* The Development of Instruments and their Music: Baroque Instruments (A304; prog 2).
18.10* English Urban History 1500-1780: The European City (A322; prog 2).
18.35* Making Sense of Society: Guernsey: Land and Water (D101; prog 5).

RADIO 3 (VHF)
6.00 Soviet Government and Politics: Magazine for Students (1) ([illegible]; prog 1).
6.20 Urban Development: Craft, Industry and Back-Street [illegible] Ibadan (DT201; prog 5).
6.40 Technology for Teachers: In Courses (PET271; prog 1).
17.45 Decision Making in British Education Systems: Cuts in Education Expenditure (E221; prog 3).
18.05 Statistics: An Interdisciplinary Approach: Set Book and [illegible] (MDT241; prog 2).
18.25 Genetics: Peas and Probabilities (S299; prog 1).
18.45* Systems Management: Basic Systems Concepts (T243; prog 3).
19.10* Technology Foundation Course: Automation (T100; prog 16).

Replacement programmes for north Scotland and parts of Wales
00.20* Personality and Learning: Personality Assessment: The Single Case (E201; prog 4).
00.40* Open Forum—6.

Friday March 18

BBC-1
6.40 War and Society: The Origins of World War I (A301; prog [illegible]).
7.05 Renaissance and Reformation: Platonism in Art (A201; prog [illegible]).
7.30* Systems Performance: Human Factors and Systems Failures: Flight Failures (TD342; prog 3).

BBC-2
6.40 Patterns of Inequality: [illegible] Britain (D302; prog 3).
7.30* Twentieth-Century Poetry: [illegible] It New . . . (A306; prog 3).
16.55 Science and Belief: From Copernicus to Darwin: The Impact of [illegible] Europe ([illegible]; prog [illegible]).
17.20* Solids, Liquids and Gases: Interatomic Forces (ST285; prog 2).
18.10* Social Psychology: Social Psychology Laboratory (D305; prog 10).
18.35* The Early Roman Empire: The Rise of Christianity: The Image of Empire (A291; prog 2).

RADIO 3 (VHF)
6.00* Environmental Control and Public Health: Desalination—Yes or No (PT272; prog 2).
6.20* An Introduction to Materials: Supplementary Materials (TS251; prog 6).
6.40* Images and Information: [illegible] (ST291; prog 3).
17.45* Integration and Normed Spaces: The Integral of a Step Function (M331; prog 3).
18.05 Linear Mathematics ([illegible]; prog 3).
18.25 Ecology: [illegible] Programme—What [illegible] Achieved? ([illegible]; prog 1).
18.45 Biochemistry: Water ([illegible]; prog 2).
19.05* Science Foundation Course: Water: An Eccentric Liquid ([illegible]; prog 5).

Replacement programmes for north Scotland and parts of Wales
24.00 Renaissance and Reformation: [illegible] Platonic Tradition (A201; prog [illegible]).
00.20 History of Architecture and Design 1890-1939: [illegible] Perret (A305; prog [illegible]).
00.40 The Age of Revolutions: The Iron King (A202; prog [illegible]).
* repeated programme

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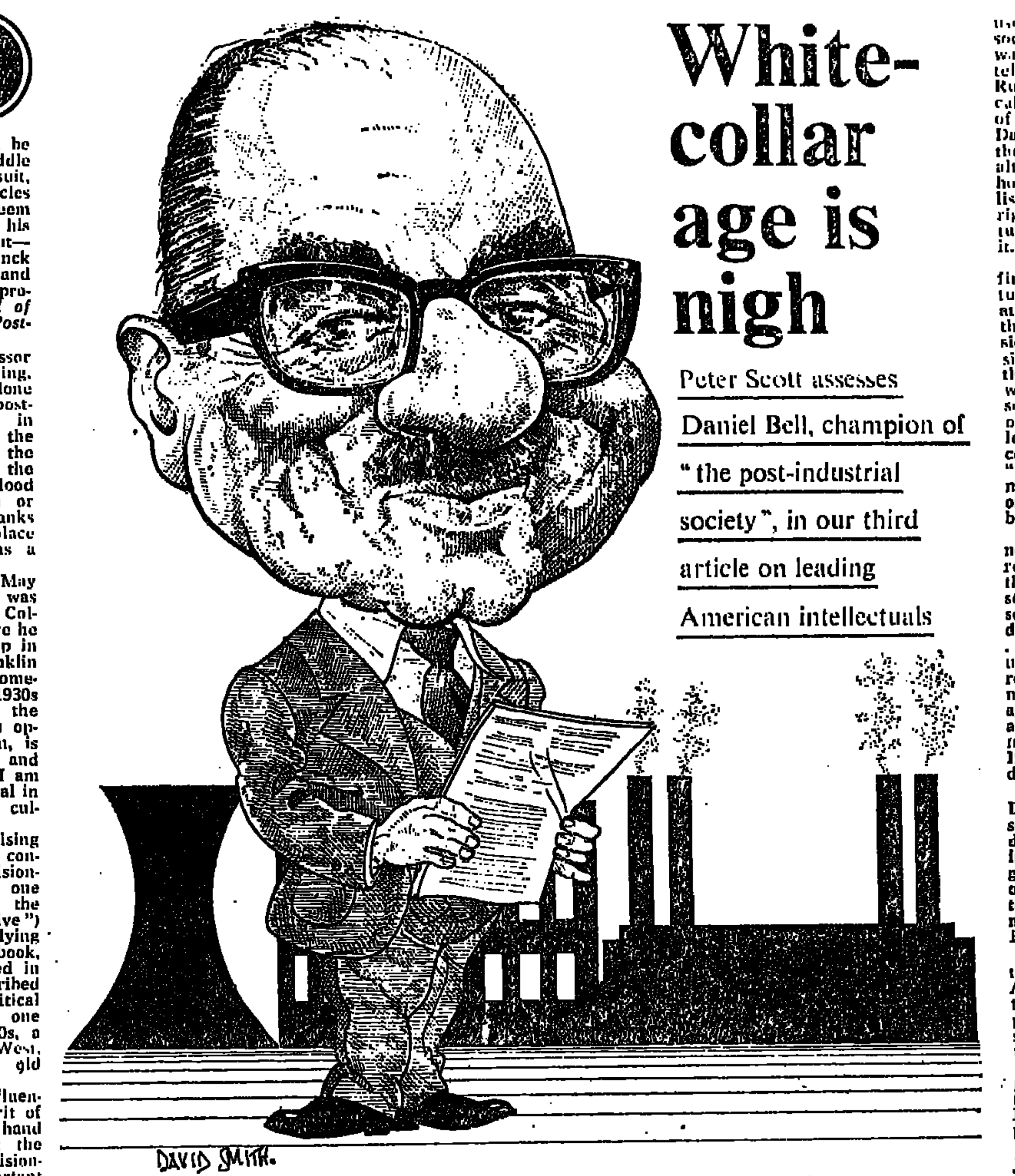
PROFILE

White-collar age is nigh

Peter Scott assesses Daniel Bell, champion of "the post-industrial society", in our third article on leading American intellectuals


DAVID SMITH.

Daniel Bell at first sight might be mistaken for a banker, below middle height, quiet blue pin-striped suit, neat moustache, and spectacles without which his face would seem incomplete. But when he opens his mouth to let the words tumble out—Aristotle and Arendt, Maeterlinck and McNamara, de Tocqueville and *Time* magazine—the Harvard professor and author of *The End of Ideology* and *The Coming of Post-Industrial Society* is revealed.

In an important sense Professor Bell's appearance is not misleading. That the man who perhaps has done most to refine the concept of post-industrial society—a society in which among other features the centre of gravity moves from the proletariat at the factory gate to the millions of commuters who flood daily into New York, London or Tokyo to fill the offices and banks—would not look out of place among these commuters seems a neat conjunction.

Daniel Bell was born in May 1919 in New York City. He was educated there, first at City College and then at Columbia where he received his PhD. He grew up in the vibrant years of Franklin Roosevelt's "New Deal" and something of the flavour of the 1930s and early 1940s, in particular the enthusiasm for technocratic as opposed to ideological radicalism, is still preserved in his intellect and temperament 30 years later. "I am a socialist in economics, a liberal in politics, and a conservative in culture", he says.

So it is not perhaps surprising that the dichotomy—even the conflict—between technical decision-making and ideology ("the one calculating and instrumental, the other emotional and expressive") should have been an underlying theme in his first influential book, *The End of Ideology* published in 1960. In it Professor Bell described the exhaustion of the old political passions. He wrote: "Thus one finds, at the end of the 1950s, a disconcerting caesura. In the West, among the intellectuals, the old passions are spent."

The End of Ideology was influential because it caught the spirit of the age so well. On the one hand its thesis seemed to protect the legitimacy of the technical decision-makers, who had been an important force behind the "New Deal", from the ignorant assaults of ideologists. On the other it seemed an effective intellectual repudiation of the reactionary politics of the 1950s, whether of the indolent Eisenhower variety or the more virulent McCarthy or Nixon strain.

One is drawn to compare it to another, more pragmatic, work, Clark Kerr's *The Uses of the University* published shortly after. Both books belong to that brief moment of calm in American intellectual and political life when the paranoic passions of Cold War had diminished and the troubles of the later 1960s had yet to begin.

Professor Bell was unlucky. In the very year that *The End of Ideology* was published a new Administration came to power in Washington with geopolitical and domestic ambitions that in a very short time would re-create ideological divisions in American society even wider than those of the 1950s.

To be fair to Daniel Bell it was the popular interpretation of his book rather than what he actually wrote that was proved wrong by the events of the 1960s. He himself has always had a particular fascination for ideology. His first book, published in 1952, was a *History of Marxian Socialism in the United States*, closely followed in 1955 by *The New American Right*. References to Marx still pepper his more recent works and outnumber those to any other author, including Weber.

In fact in *The End of Ideology* he had been far-sighted about the likely shape of future events. Of the younger generation he wrote: "In the search for a 'cause', there is a deep, desperate, almost pathetic anger, a restless search for a new intellectual radicalism. . . . The emotional energies—and needs—exist, and the question of how one mobilizes these energies is a difficult one." Unsympathetic words perhaps but hardly unperceptive ones.

Daniel Bell's first job was not in a university but as a journalist. In 1939 he joined the staff of *The New Leader* as a writer and two years later became its managing editor, a post he held through the war years. Even when he began to teach social sciences at the University of Chicago in 1945 he did not sever his links with journalism entirely.

For 10 years after 1948 he was labour editor of the magazine *Fortune*. In fact it was in a series of articles in *Fortune* in the 1950s that he first examined the relative decline in the proportion of production workers within factories and the simultaneous rise of professional and technical workers as a powerful force within the occupational structure, two of the basic building blocks for the later construction of his theory of post-industrial society.

Academics who dabble too often and too much in journalism run the risk of incurring the contempt of their peers either through genuine fear of the corrosive quality of popularizing or through equally genuine envy. It is a charge that is rarely made about Professor Bell in Britain, and in the United States more rarely still. The British sociologist who said: "Bell refers in one of his footnotes to *hautes vulgarisations* in the *New York Review of Books* but the same can be said of some of his own work. He even writes for them" does not have very many followers.

Indeed his background in journalism has probably been a source of strength not weakness to Daniel Bell as a social thinker ("sociologist" has always seemed an inadequate label). It explains his conspicuous ability to communicate his ideas, eloquently in person and persuasively on paper.

It explains also what someone who has known him for many years calls "his deep sense of underlying social reality": Professor Bell has many of the characteristics of the ideal newspaperman, energetic, inquisitive, adaptable, fascinated by the discovery of new facts and phenomena that call for general explanation.

Above all it helps to explain the range of his interests. In *The Coming of Post-Industrial Society*, which was first published in 1973 and is likely to be his most enduring work, he uses the skills and knowledge of economics, political science, sociology, even advanced engineering and philosophy, to explain and to illuminate his theme.

Not content with this impressive concentration of knowledge, Professor Bell in his most recent book *The Cultural Contradictions of Capitalism* insists on adding the affective to the instrumental dimensions of future social change and conducts a formidable—although less successful—foray into the territory of culture and sensibility. Even the most traditionally minded academics who have the greatest possible respect for the boundaries between disciplines are forced to admire his nerve.

Talking to Daniel Bell is a similar experience to reading his books. A moment's day-dream, like a brief loss of concentration, and the discussion has moved on several centuries and crossed to other continents.

A conversation may start with debating the success or failure of the new universities, move quickly on to the damaging effects of excessive politicization of German universities, move on again east and leave higher education behind and end several thousand miles further east and in another age with his thoughts on why the communist revolution in China was followed by such a sterile period in the arts compared to the explosion of artistic endeavour and achievement in Russia after 1917.

Even this wide range of subjects does not include the one that in recent years has become an increasingly central concern for Professor Bell, the impact of technology on society and in particular the impact of communications technology.

He points out that according to the latest census figures 54 per cent of the working population of the United States is involved in information functions—everything from Walter Cronkite reading the CBS nightly news on television to credit card transactions and clerks making airline or hotel reservations using a computer. Even in the most ancient of all occupations, agriculture, four per cent of the workforce is similary employed. Professor Bell has coined, or at least made current, a neologism to describe this heterogeneous bundle of jobs, compunication.

He is fascinated by the social effects of advanced technology. One almost feels that if he were not a Harvard professor he would be most happy as the chairman of Texas Instruments. He describes with schoolboy-like relish an experiment at the Massachusetts Institute of Technology called "Autoshoe".

A computer graphic of the exact shape of the customer's feet is produced using techniques developed in the design of the Concorde. The customer then selects the material, colour and style of the shoes he would like. Within a short time he is presented with a custom-made pair of shoes. The point of manufacture has been brought to the point of sale.

Yet Daniel Bell's enthusiasm for futurological freaks like "Autoshoe" should blind no one to his serious and academic commitment to explore and if possible to explain the social consequences of advanced technology. Seen in this context "Autoshoe" can be regarded as an allegory of social and economic change.

Technical progress, of which the improvement of information systems is both a part and an agent, has transformed not only the occupational structure of the economy but social relationships and even the individual's perception of himself as well. It is Professor Bell's serious attempt to incorporate the latter into his theory of social development, to try to describe the "quality" as well as the "quantity" of social change, that gives his analysis both intellectual force and eloquence.

If 10 years ago it had been necessary to sum up Daniel Bell's contribution to sociology in four words, few people would have hesitated to use the title of his book, *The End of Ideology*, for this purpose. Asked the same question today, most people would choose the title of a more recent work, *The Coming of Post-Industrial Society*. Perhaps it is not too fanciful to regard the first book as the major intellectual product of his New York period (he was at Columbia from 1952 to 1969) and the second of his Cambridge period.

Professor Bell was not the first to use the phrase "post-industrial society". The first man to do so was a British guild socialist, and intellectual descendant of Morris and Ruskin, who wrote a book in 1917 calling for a return to the society of skilled craftsmen. Also in 1958 David Riesman used the phrase in the title of an essay on leisure. But although not the original freeholder, Daniel Bell has now established such a formidable squatter's right to the idea that no intellectual court is ever likely to challenge it.

The idea developed slowly. He first used the phrase in some lectures given in Salzburg in 1959 but at that stage it denoted little more than a society in which the provision of services has become more significant as an economic activity than the production of goods. It was only in the 1960s that Professor Bell incorporated the new idea of the rise of what he calls "intellectual technology" into the concept of post-industrial society. By "intellectual technology" he meant more than simply systems analysis or PPBS (programme planning budget systems).

"The goal of intellectual technology is, neither more nor less, to realize a social alchemist's dream: the dream of 'ordering' the mass society", he wrote. "In this society today, millions of people daily make billions of decisions. . . . Any single choice may be as unpredictable as the quantum atom responding erratically to the measuring instrument, yet the aggregate patterns could be charted as neatly as the geometer triangulates the height and the horizon. If the computer is the tool, then decision theory is its master."

What is post-industrial society? Daniel Bell has devised a general scheme of social change which divides nations into pre-industrial, industrial and post-industrial categories (the last occupied at present only by the United States but likely to include by the end of the century most of western and part of eastern Europe, Japan and Australasia).

Pre-industrial societies—most of the world outside Europe and North America—depend on primary industries and the most significant occupational groups are farmers and unskilled workers. What technology they have is based on the exploitation of raw materials. Their "axial principle" is the physical limitation on land and other resources. In Professor Bell's phrase they must play "a game against nature".

Industrial societies—Europe and Japan—are goods-producing economies and the major occupational groups are engineers and skilled workers. The technology of such societies arise from their need for energy. Their "axial principle" is economic growth: a game against machines.

Post-industrial society is a service economy—communications, banking, insurance, finance, increasingly health and education as well. The predominant occupational groups are professional and scientific workers. Its technology is information and "axial principle" the centrality and codification of theoretical knowledge. A game between persons.

Professor Bell argues that as a society moves from the industrial to the post-industrial state many of our present analytical tools become less adequate. For example, the concept of gross national product may be appropriate in a market economy in which the transactions it does not cover largely take place within domestic households. But in a post-industrial society where an increasing number of transactions take place outside the market economy in what Professor Bell calls "the public household" GNP must be replaced, or at least supplemented, by a much more comprehensive notion of social accounting.

Similarly—and here he is perhaps on shaky ground—he suggests that the focus of conflict also shifts, from relations between employers and workers in industrial society where the major problem concerns the provision of capital and the growth of the economy, to the organization of science and inevitably to its politicization in post-industrial society.

Professor Bell wrote: "The student revolts of the late 1960s were, in part, a reflection of the new power of an adversary culture reacting against the growth of a science-based society. But in greater measure, the student revolt was a reaction to the 'organizational harness' a post-industrial society inevitably drops on intellectual work."

Here perhaps is the weakest link in Daniel Bell's argument. He recognizes that there will be domestic and foreign groups opposed to the

continued on next page

High energy spirits get a boost from diversification

Clive Cookson describes new areas of research proposed for the threatened Rutherford laboratory

The rapid run-down of high energy physics research in Britain ends next year with the closure of our last big accelerator, Nimrod, the 8 GeV proton synchroton at the Rutherford Laboratory, in Oxfordshire.

As Nimrod's demise approaches, however, spirits are rising at the Rutherford, home of the country's nuclear physics programme since 1957. They fell very low when last year's financial crisis forced the Science Research Council to announce a 1978 closure date for the accelerator, which had been due to keep going into the 1980s, and some physicists working on Nimrod remain upset that their experiments may never be finished.

Other staff are becoming increasingly hopeful that the laboratory as a whole will survive relatively unscathed, thanks to a vigorous policy of diversification away from high energy physics, being pursued with strong support from the SRC, the Rutherford's parent body.

The laboratory's director, Dr Geoffrey Stafford, forecasts a loss of only 200 of the present 1,200 staff by the early 1980s if things go according to plan. This could be achieved by natural wastage without redundancies.

The Rutherford's activities would then be split into three roughly equal parts: high energy physics work for CERN, the European accelerator centre near Geneva; work for the SRC's Science Board (mainly neutron beams and lasers); and engineering and computing activites. Seventy per cent of current work is in the high energy field.

A key element is the proposed conversion of Nimrod, after its closure, into a "spallation neutron source", giving short but extremely intense pulses of neutrons. Some sceptical university scientists see the idea primarily as a means of avoiding a jobs crisis at the Rutherford rather than providing a vital research facility, but Dr Stafford is convinced of its "very great scientific potential".

The Rutherford's Neutron Beam Research Unit has prepared an outline design for such a neutron source, based on the Nimrod complex's equipment and buildings. It could be built for less than £7m, excluding staff costs, and completed within four years. (The cost of building a similar machine from scratch would be £25m.)

The laboratory's senior staff know the spallation neutron source has high level support in the SRC and they seem confident that it will soon be approved, though they are naturally anxious not to encourage publicity about it at this delicate stage. As Dr Stafford said: "If it is approved we are in a very healthy state, if it is not, the managerial problems will be severe."

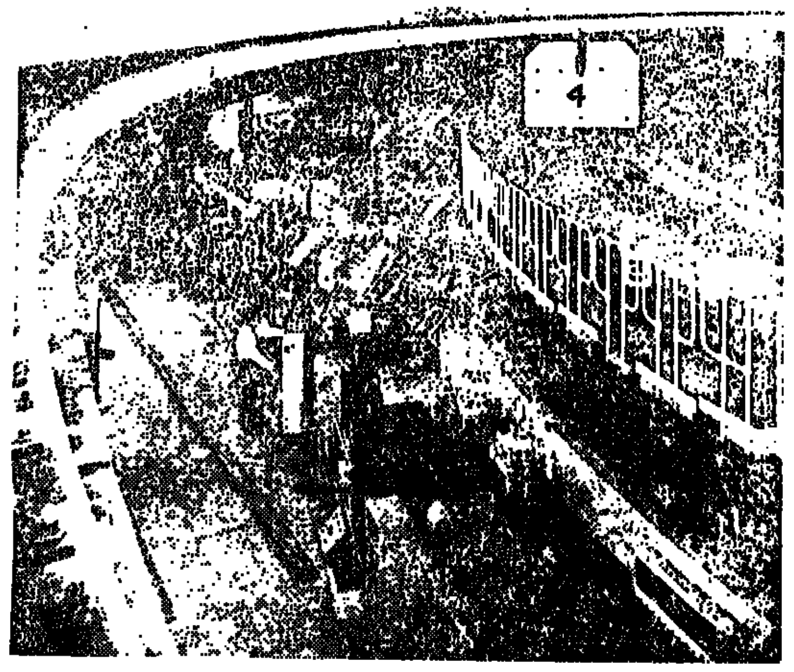
Another venture whose success will be very important for the future is the high power laser centre, which is just coming into service. It will provide two opposing laser beams whose combined power of 800,000 Megawatts—ten times Britain's total power station output—will allow university physicists to investigate little known states of matter, the dense plasmas.

They are created when the two "beams" (really infra-red light pulses lasting less than a thousandth of a microsecond) strike the tiny spherical target and compress it to perhaps a thousandth of its original density at a temperature above 100m degrees.

University research groups will also be offered time on the laser for more conventional experiments in optics, spectroscopy and plasma physics.

Dr Stafford identified computing as another "key element" in the laboratory's development. The previously independent Atlas Computing Laboratory was absorbed into the Rutherford in 1975, and is now one of the top three or four computing centres in Britain.

The three main computers (IBM 360/195, ICL 1906A and smaller GEC 4080) are used for the extensive data handling and analysis required in high energy physics and for research into computing techniques and "software" development. They are also linked to many universities and research institutes in Britain and overseas through a complex and expanding series of computer networks.



Inside the Nimrod accelerator. Due to close but conversion planned

A major research effort is under way to extend the range of "interactive computing facilities", which allow the operator to communicate with the computer as it works on his programme and to feed in instructions as he goes along. It will be particularly useful for designers of complex engineering equipment.

Some activities originally geared to high energy physics have become important in their own right. An example is superconductivity research, which started many years ago when particle accelerators needed larger magnetic fields than conventional iron-cored magnets could give. The Rutherford is now Britain's leading centre for super-conductor technology.

This expertise will be very valuable if the long-delayed European fusion project JET (Joint European Torus) comes to Culham, the Atomic Energy Authority's establishment? six miles away. The production of a superconducting magnet to keep the high temperature plasma within JET's doughnut-shaped reactor will be a critical element in the project.

Particle and radiation detectors developed for high energy physics are being applied in other fields—including medicine. The Rutherford's electronics group is working with Leeds University and Leeds General Infirmary on an "X-ray multiwire proportional counter" to measure variations in bone density. It shows great promise as a means of detecting the small density changes that presage bone disease and mineralization, and clinical trials will soon start in Leeds.

The flexible attitudes of the Rutherford scientists (in contrast to some of their university colleagues) are making diversification away from high energy physics relatively easy, Dr Thomas, head of the Technology Division, says. "We have only about 60 scientists who are dedicated to one particular field, for example nuclear physics or lasers.

"The really important resource we have is skilled applied scientists. We can put together multidisciplinary teams to tackle most problems in applied physics—something at which universities are often very bad."

A major role for these teams is the design and production of large-scale experimental apparatus, especially for CERN. Examples include "polarized targets" for accelerators, whose temperatures must be kept within half a degree of absolute zero.

The SRC is beginning to make money available for university engineers to use the Rutherford's excellent facilities, but it is proving difficult to get the academics interested. Rutherford scientists are sometimes disconcerted by the narrowness of view and conservatism they come across in engineering departments, which find it difficult to accept that part of their work might be done better elsewhere—in contrast to nuclear physicists, who are only too eager to use central facilities.

White-collar age of Daniel Bell is nigh

continued from page 7

creation of post-industrial society—this adversary culture which may be particularly influential in higher education, the power-house of the new order; the ideologists (Sir Keith Joseph in Britain, Milton Friedman in the United States); powerfully "entrenched" interest groups within industrial society, most notably the trade unions; even the man in the street opposed to creeping bureaucratization; and perhaps most important of all, the hundreds of millions in Asia, Africa and Latin America locked in pre-industrial poverty.

In a recent article in *Encounter* he wrote: "The new social forms I speak of advanced industrial societies—are inchoate and it may well be that they will be overwhelmed from within by the declining social classes who, with greater urgency, are seeking to protect their old positions, and from without by the rising forces of the third and fourth and fifth worlds that find themselves economically disadvantaged in the terms of trade". Yet he has no answer except to say "something deeply irrational has been unloosed in the world and we have run out of words to describe it".

This is the most important weakness in Daniel Bell's theory of post-industrial society. It is too calculating and too instrumental and takes too little account of emotion which plays such an important part in the determination of human affairs. Perhaps this is not a surprising fault in the author of *The End of Ideology*. To be fair to Professor Bell, he has tried in his last book, *The Cultural Contradictions of Capitalism*, to remedy this weakness and to discuss the cultural implications and influences of the social and economic developments he describes in *The Coming of Post-Industrial Society*. So far he has not attempted to do the same for political power (except briefly in chapter six "Who will rule").

It is surely not adequate, nor very realistic, to see knowledge as the primary resource of power and the university or research institute as its social locus in post-industrial society. Henry Kissinger was the exception, not the rule. Politicians and administrators, even in America, are still as likely to be land-owners or businessmen as scientists.

This weakness raises the question of how the ideas of Daniel Bell should be related to the great Marxian and Weberian traditions of the social sciences. He cannot be described as even remotely a Marxist. He rejects determinism in general and the idea of society as determined almost exclusively by economic relationship in particular. He owes much more to Weber but again pays comparatively little attention—perhaps too little—to the questions concerning authority and bureaucracy raised by the idea of post-industrial society.

Daniel Bell's view of the motive force in human affairs seems to be on the one hand the orderly progress of knowledge bringing with it increasing economic prosperity and social harmony, and on the other of atavistic cultural and political forces that may rise up to destroy this progress. Perhaps he is best seen as a positivist with a dash of Spengler and H. G. Wells.

However, these are minor qualifications. A theory of social development able to encompass equally every aspect of human behaviour—social, political, economic and cultural—would have to be so elastic that it would lack any intellectual tension.

A typical verdict on his academic achievement appeared in a review of *The Coming of Post-Industrial Society* in the *British Journal of Sociology*: "It is an impressive piece of work, not only because of the range of ideas, theories and empirical data which are discussed but also for the way in which these are synthesized into a coherent argument."

This would be a fair but certainly not over-generous verdict on the man himself. Daniel Bell is not simply a squirrel hoarding fascinating but unrelated facts; he is more like a beaver manoeuvring logs into great dams that control and divert the current of sociological thought.

NEXT WEEK: Paul Ehrlich

Government must lead on in-service training

That is the conclusion of a THES survey into spending on this area, as Judith Judd reports

Mr Oakes, Minister for Higher Education, is likely to be disappointed in the fate of the £7m allocated in the rate support grant for in-service training. A survey of county councils shows that few will be spending more this year than last. Almost everywhere there will be cuts in the number of teachers seconded and in some areas in other types of provision as well.

The expansion of in-service training was the James Report's most important single recommendation and the chorus of voices demanding action has been growing louder ever since. The education world has been surprised and delighted by ministers' recent repeated commitment to the idea and by the decision to allow 10,000 places for in-service training in the colleges and polytechnics by 1980.

But the important questions about both the distribution of money and of places have not yet been answered. How can local authorities be made to spend the money on in-service training rather than more popular items?

This has always been a notoriously sensitive subject for authorities. On the one hand they are faced with the clamour of the Government and the educationalists; on the other, they must contend with public opinion which is often hostile to projects from which there is no obvious and immediate gain.

In some counties, Mr Oakes' words have failed to prevent sizeable cuts. In Hereford and Worcester, the original estimates for in-service training were slashed by £55,000. The cuts made in the Education Committee's proposals mean the county will be spending £156,000 in 1977-78 compared with £193,000 last year. In Hampshire, the total spending has been cut from £894,700 to £683,100. East Sussex will trim £29,000.

Nottinghamshire is a good example of a place where conflicting pressures are at work. All one-term and one-year secondments for teachers were suspended a year ago and will continue. The county has chosen to spend its money on the politically more popular cause of upholding its pupil: teacher ratio.

The big cuts, however, are not typical of the general picture, which is one of standstill. The most common response to a question asking how this year's figures compare with last year's is: "They are the same." Authorities such as Lincolnshire, Northumberland, Avon, Cheshire are all in this category.

Though a general view can be formed all the figures in the survey must be treated with caution. The financing of in-service training is complicated: authorities break down the figures in different ways and some were unable to break them down at all. Transport of teachers to courses may be shown as part of general transport costs rather than part of the in-service budget. It must also be remembered that some of the expenditure on full-time and part-time secondment is recoverable from the pool.

An examination of the different categories of spending shows a fairly consistent pattern throughout the country. Mr Oakes has already accepted that local authorities will be unable to afford much full-time secondment and that the hoped-for expansion will have to come in part-time courses. Hence the attempts of colleges of education and polytechnics to develop part-time in-service BEds.

Clearly Mr Oakes is right. Secondment is the victim of most of the bigger cuts. In Warwickshire it will go down from £341,000 to £284,000, in Gloucestershire from £90,700 to £35,860, in Hertfordshire from £293,600 to £147,800, in Somerset from £21,460 to £19,070 and in North Yorkshire from £191,600 to £189,300.

In some cases the drop is matched by a small increase on short courses: in Gloucestershire from £20,000 to £27,650; in Somerset part-time secondment goes up from £3,540 to £4,160 and there are slight increases in money to be spent on courses both inside and outside the county; in Hertfordshire short courses will account for £179,300 in the coming year compared with £175,900 this year.

The shift away from full-time secondment may not be disastrous provided other forms of in-service training are maintained. The purpose of training has always been twofold—the teacher's own personal development and the improvement of the instruction he or she gives. Though the two are closely linked, full-time secondment has generally been associated with the first.

It has been suggested that school-based training might play an increasing part in supplying refresher courses. Durham County Council suggested that the major fault in the survey was that it did not take into account school-based training "which costs nothing".

But some of those involved in training argue that this is false. If school-based training is being done properly, teachers will have a fixed amount of time free each week which will be filled by other teachers. There are wide variations in school-based training, often depending on the determination of the head. Even where there is regular, organized consultation between staff, the results may be insignificant.

The teachers' centres themselves seem to have escaped the worst cuts. Most authorities will be spending about the same amount on them, and a few will be spending a little more.

Leicestershire has chosen to expand the work it does in them. There are plans for a new centre for higher level courses and an increase in spending from £270,590 to £280,785. But it is not typical and it seems likely that it will remain untypical in a survey begun recently by the National Association of Schoolmasters/Union of Women Teachers. Its early findings show that provision is either being maintained or slightly decreased.

Mr Fred Smithies, Assistant General Secretary (Education) said the union would have expected to see an increase in the amount of money being spent on in-service training after the Government's announcement that £7m was earmarked for the purpose.

The Government, too, is having serious doubts and is known to be considering ways in which it could ensure that money intended for in-service training actually reaches its destination.

The National Union of Teachers has been pressing for such a grant for some time. The obvious objection is the difficulty in treating education differently from other services.

Whatever the objections, our survey shows that the Government must act if the promised expansion of in-service training is not to remain a mirage.

Mike Duckenfield examines the history of the Nobel Prize

A wealthy vagabond's controversial legacy

The only thing new about last December's howl of protest over the decision to give Professor Milton Friedman one of the six 1976 Nobel prizes was that it extended controversy over the awards to economics.

Disputes over the other prizes have become almost commonplace, recent eruptions accompanying Dr Kissinger and Pham Van Dong's shared 1973 peace prize and Alexander Solzhenitsyn's literature prize three years earlier.

The prizes were born in controversy and, though Alfred Nobel died in 1895, it was not until 1901 that the first awards could be made. The institutes designated by his will to give the prizes did not want the job, both Swedish Conservative and Social Democrat parties were hostile and King Oscar II thought the will impracticable.

There were also problems of domicile. Although born in Stockholm, Nobel had spent most of his youth in St Petersburg and almost all the remaining period abroad; in Hamburg, where he patented dynamite; Paris, his headquarters; San Remo, where he died; and Ardeer, Scotland, where he lived most of the years 1871-75.

Known as the "wealthiest vagabond in Europe", Nobel, a bachelor, owned 355 patents and more than 80 companies in 20 countries. His assets, which took four years to capitalize, amounted to 33.2m Skr—at today's values about £40m. The largest single part was in Britain, where his factories were later merged with others to found ICI.

His estate went into a fund. Annual interest from its investment is divided into five for the prizes in chemistry, medicine, physics, literature and peace. Last year these were each worth 681,000 Skr (£98,000)—tax free in most countries.

To administer the fund a foundation was set up. Three Nobel institutes were also established in Sweden—the Swedish Academy (literature), the Royal Caroline Institute (medicine) and the Royal Academy of Science (chemistry and physics). The Norwegian parliament is responsible for the peace prize.

The selection of prizewinners is highly secretive. Nominations close on the first day of February and are then considered during the spring and summer by five-man committees—one for each prize—appointed by the academies or, in the case of peace, elected by the Norwegian parliament. (At the time of Nobel's death Sweden and Norway were a united kingdom.)

As prize money has risen—it has doubled in the last decade—and the status and commercial potential of the awards has increased, the academies have come rather to relish their autocratic patronage. In spite of criticism of their secrecy, the academies release no information on their deliberations, votes or the names of unsuccessful nominees. Only short, often vague "motivations" for the final choices are published and not even that for the peace prize.

The least controversial prizes have always been those in medicine, physics and chemistry. Neither taste nor politics interfere with the committees' choices and prizes are usually awarded before disputes about the application of research discoveries can arise.

Any survey of the 100 or even 200 most important scientists this century would almost certainly comprise about 75 per cent Nobel winners. Well known laureates include: Einstein, Sir Alexander Fleming, Pavlov, Max Planck, Niels Bohr and Sir Peter Medawar.

Nevertheless, there have been omissions of importance including the French physicist Paul Langevin, who invented sonar, the "father" of Soviet space travel Konstantin Tsiolkovsky, the Austrian chemist Friedrich Paneth, who developed radioactive tracers, and the German physicist Hans Geiger, who invented the counter named after him.

Nobel's tight definitions—"the most important discovery, invention or improvement"—have also tended to exclude medical practitioners such as John Shea, the American otologist, his countryman Willem Kolff and South Africa's Christiaan Barnard who have made major leaps forward in ear, kidney and heart surgery.

Unlike the other awards, the pure sciences show a high concentration of laureates in a handful of countries. Of the 107 physics winners, 65 per cent have come from the United States, Britain and Germany. Since 1939, the United States have provided one in two winners.

In the last 76 years 73 authors have won the Nobel literature prize. Yet, less than half are generally known names in Britain and probably only a dozen are even frequently read. Who can even name the countries these writers came from—Mommsen, Eucken, Pontoppidan, Reymont and Gabriela Mistral?*

Omissions, on the other hand, include Gorky, Valéry, Malraux, Cocteau, O'Casey and Ehrenburg as well as Tolstoy, Joyce, Brecht and even Strindberg. Others, notably Kafka, Chekhov, D. H. Lawrence, Orwell, Proust and Rilke died too young—the average age of winners is 62.

The Swedish Academy's choice of seven Americans—Sinclair Lewis, O'Neill, Pearl Buck, Faulkner, Hemingway, Steinbeck and Bellow—raises few quibbles, although there is no place for Dreiser, Dos Passos or Frost. Their choice of six Britons, however, is remarkable.

Instead of Hardy, Auden, Conrad and Forster, the list includes Kipling—at 42 the youngest literature winner—Galsworthy, Bertrand Russell and, amazingly, Churchill. The remaining two are Shaw and Eliot, neither born in Great Britain (nor was Kipling). In recent years Graham Greene has been frequently mentioned, but not chosen.

The unavoidable reason why so many deserving nominees have failed has been the academy's promotion of Scandinavians despite Nobel's instruction that prizes should go to the authors of "the most outstanding work of an idealistic tendency whether he be a Scandinavian or not".

In retrospect the late-1950s was a watershed for the academy. Until then eight authors won the prize for single works including Thomas Mann (*Buddenbrooks*), Galsworthy (*The Forsyte Saga*) and Hemingway (*The Old Man and The Sea*). Since 1954 citations have only been for bodies of work.

As yet no African has won the prize, although the names of South African playwright Athol Fugard and Rhodesian-born novelist Doris Lessing have recently been mooted.

Another change was more controversial—the decision to award the prize to Pasternak in 1958. Coming shortly after the Rome publication of *Dr Zhivago*, the award was seen as partly political.

Although the academy deny non-literary motives in prize-giving, there have been clear cases where politics—internal or external—have played a major part. Churchill's award for his histories and "brilliant oratory in defending exalted human values" was one.

The underlying problem with the peace prize is that ideas of what activities promote peace have changed since Nobel's day. Unfortunately his will is very specific: the prize should go to those having done "the most or best work for fraternity between nations, for the abolition or reduction of standing armies and for the holding of peace congresses".

Possibly because of this the Norwegian committee has been unable to find a suitable winner 31 times in 76 years. On 11 of these occasions they chose one a year late, but for the remainder no award was made at all, the most recent being last year.

In all 71 people or institutions have won the prize, 15 of them sharing it. As many as 31 were national politicians. Names include Theodore Roosevelt, Sir Austen Chamberlain, Aristide Briand, Willy Brandt, Woodrow Wilson, Eisaku Sato and Labour party leader Arthur Henderson.

More Americans have won the prize than those from any other two nations together. On the other hand, only two Communists—both in the past four years—four religious leaders and one of four United Nations general secretaries (Hammarskjöld) have won it.

No woman has won it for the past 30 years and disarmament has not been mentioned in a citation since 1934. No peace research institute has ever won it and neither did Gandhi.

Although the economics award is commonly called a "Nobel prize", it was not specified by Nobel and only came into existence in 1968. The Central Bank of Sweden, to mark its tercentenary, persuaded the science academy to award the prize "in memory of Nobel" at the same time as the others, prize money being given annually by the bank.

Despite sceptics, who foresaw the problems of divorcing economics from politics, the academy agreed. Divisions over the distinction between economic theory and practice came to a head last year with the choice of Professor Friedman.

The introduction of a new Nobel prize raises other questions, too—why not update Nobel's criteria for making awards, especially in peace, and why not introduce a prize for ecology?

The fault in such arguments, however, is that they support the status of the Nobel prizes as the world's highest mark of distinction when, perhaps, it is time to start considering them just one set of prizes among many.

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* *They come, respectively, from Germany, Germany, Denmark, Poland and Chile.*

Four of Britain's Nobel Prize winners: Rudyard Kipling, George Bernard Shaw, Winston Churchill and Bertrand Russell.

Frances Gibb visits St David's College, Lampeter, which is celebrating its 150th birthday

Where Welsh trains and scientists never go

Remoteness has always been a feature of St David's College, Lampeter. Transport has improved since it opened 150 years ago, but there is still no train service to it and the nearest big town, Carmarthen, is 20 miles away.

Lampeter is peculiar in another respect. It has only 600 students, the smallest—if the oldest—of the constituent colleges of the University of Wales. Yet in its setting, a tiny market town in the hills of Dyfed with only 2,500 inhabitants, it is a focal point.

The college has wrongly been labelled a theological college. It was founded by Dr Thomas Burgess, Bishop of St David's, because of the low standard of education of Welsh clergy, but has always provided a general university education, even when the majority of its students were ordinands.

Lampeter's future as a university college was only recently secured when in 1961 it finally received University Grants Committee support. This was an uphill struggle fought by several college principals.

The first blow came in the 1890s, with the setting up of the University of Wales. The Government withdrew its grant to the college, feeling unable to support both it and the university. Another blow came in 1951, when the High Court decided that St David's could not be rated as a university college on grounds since contested.

Finally, with closure a real threat, the college received UGC funds, but under the aegis of the University College of Wales, Cardiff, which acted as its "academic guarantor". Not until 1971 was it formally admitted to the university as a constituent school in its own right.

The second major change in the past few years has been the ending of its role in training students for the church because of the fall in demand. Last summer, the last two ordinands passed out of the college, and in 1975 the first lay principal, Dr B. R. Rees, was appointed. But this has not meant the end of theology as a subject in the college, although its future is certainly under scrutiny.

One of Lampeter's features is that it only has two faculties: both humanities. One is the faculty of arts, the other theology. The former embraces the bulk of the college's departments, including English, geography, history, languages, philosophy and even theology, which comes under both faculties.

Rev Peter Morris, a theology lecturer, argues that it would be premature to close the faculty now. A new role for it could exist in the area of in-service training for ordinands, for which there is demand throughout Wales. From such work a qualification comparable to the BEd might develop.

Smallness, that other ingredient of Lampeter's flavour, is on balance thought an advantage by staff and students. Students in particular have often chosen the college for its size, location and quietness. The main problems with such a small student body are arranging commercially viable entertainment and drawing up sports teams able to match the other colleges.

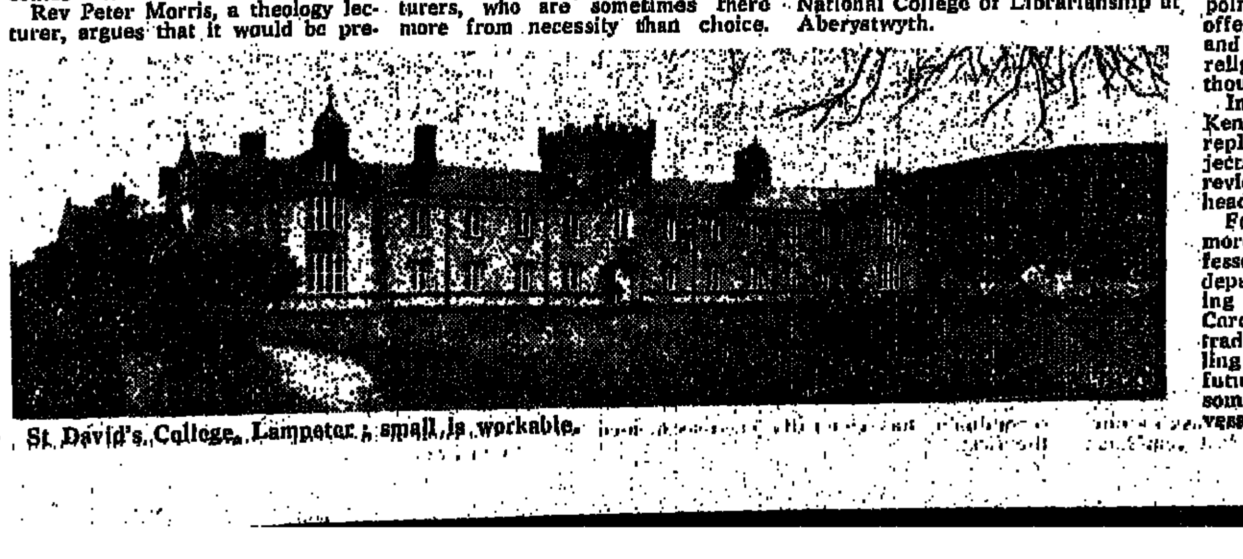
They do not want active involvement in national student campaigns and members of the union executive stand on administrative rather than political platforms. Outside interference, for instance from the Welsh Language Society or other student unions, in what they regard as internal disputes is fiercely resented.

Feelings of "cultural and social deprivation", as one lecturer put it, are found more among junior lecturers, who are sometimes there more from necessity than choice.

Although the college is arts-based, among some 70 staff there are only four women, perhaps a hangover from the all-male pre-1965 days. The student population is more evenly balanced.

Apart from geography, the strengths of the college are English and history. The latter is a more traditional course than geography and, except for this year, has attracted a steady increase in applications. Its emphasis is on British history, although Professor C. D. Chandaman, head of department, would like to see expansion in the area of European literature.

In English, where applications are up 6 per cent this year, the course is geared to student choice, both in forms of assessment and topics. One feature is the reading course, for which students select any period to study in depth and then write on it. Professor P. H. Davison, head of department, has introduced an interesting new option in text and film, for which he has secured a grant from the Nuffield Foundation and arranged also for students to use audio-visual facilities at the National College of Librarianship at Aberystwyth.



St David's College, Lampeter: small is workable.

The main problem for all expanding subjects at present is the library, which was built to cater for only 450 students. Since the Atkinson report, Lampeter has had to change its plans for a new building to those for a store. Mr George Lilley, the librarian, says that since the college is arts-based, this is particularly vital because there is little "dead wood".

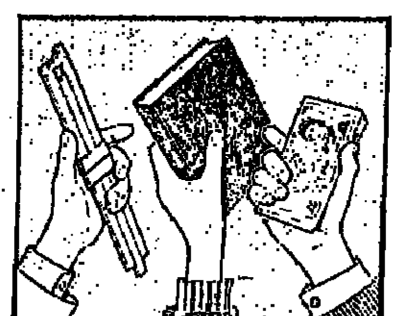
A high proportion of Lampeter's recurrent grant is however spent on the library. Its isolation means that it depends greatly on inter-library loans; last year over 4,600 books were borrowed from other libraries. But its own is expanding rapidly and has grown in the past five years by 30,000 volumes to 81,000.

Apart from this, the college is well off for facilities. It has a new health centre; it can house 90 per cent of its students and it is about to start building a new block of self-contained flats. A geography laboratory is in the pipeline.

Academically the trend is towards interdisciplinary studies, both in courses and posts. A lecturer in archaeology has recently been appointed, whose roving role is to offer courses to several departments, and the newest degree course, in religion and ethics in Western thought, is interdepartmental.

In the long-term, according to Mr Kenwright, departments may be replaced by schools of related subjects, although this would mean reviewing the whole position of heads of departments.

For now, the college can do little more than look forward. As Professor D. S. Evans, of the Welsh department, put it, "there is nothing behind it but the fresh air of Cardiganshire and the Anglican tradition". But with money trickling in from the UGC, even now its future as a college giving students something different from other universities can only be secure.



"Society has cruelly jilted pure science". P. J. Black looks at the problems this has raised for university science departments in the fourth of our series on education and industry

Project work is one answer to dilemma of 'pure' science

Departments of pure science in higher education could be forgiven for regarding society as a fickle charmer who has led them through a heart-breaking liaison in the past 20 years.

She was more than ardent in the decade of rapid expansion when their teaching and their research appeared to be loved for themselves alone. Dowries of cash and careers were committed in an equally ardent response, and the liaison promised to produce large student numbers and support for increasingly expensive research.

The jilting has been peculiarly cruel and comprehensive, particularly in the physical sciences. There has been a failure of student demand to match the increased provision of places, linked with a fickleness of the lady about the product expressed both by fluctuations in industrial recruitment for research and development, and by public expressions of doubt about the value of undergraduate—and more particularly postgraduate—degrees.

At the same time, pure scientific research has become increasingly expensive. The needs of several fields now exceed the capacity of individual universities, or even nations, to support them, and more may follow this trend. To support the "big science" fields research staff were added in the halcyon days to the already optimistic complement of teaching staff.

Today the combined effects of disenchantment with this pure research and of funding by student-staff ratio alone has left many departments under severe pressure to contract. In common with most institutions, such departments are finding it hard to develop strategy or tactics for contraction after investing years of effort in expansion.

Rapid growth leads to qualitative as well as to quantitive change. Academic subjects which are costly to support, and for which the short-term relevance to national needs is not direct, must expect to be targets for criticism when they become expensive enough to be noticed in the budget.

It is less often noticed that in school, sixth-form science subjects attract more than their share of the most able, and that the best of this élite tend to choose pure science degrees: this is a further, perhaps more important reason why society ought to ask the scientists to justify their ethos of teaching and research.

Yet that ethos—the pursuit of research for the sake only of understanding the natural world and the focusing of teaching on the achievements and methods of pure science—was not altered during the period of growth. Indeed, the numerous new recruits to the staff were drawn mainly from the output of the schools of pure research, so tending to consolidate the tradition rather than to challenge it.

However, the teaching curriculum is now under challenge for several reasons. The hope that a graduate can have a comprehensive knowledge of a subject and can reach its frontiers has been fading slowly but surely with the explosive expansion of research.

The claims for inclusion of quite new fields of work leads lecturers to work wonders of compression and reorganization, particularly when television programmes upstage the revision of some final year advanced options.

Since it is more than obvious that they cannot simply add material, the need to weave in more principles and concepts is met by cutting out the concrete; details of real apparatus, of applications, of the history. Thus subjects relentlessly become more abstract and demanding, and all but the best students often survive by learning much of the sophisticated material by rote.

Complaints are frequently expressed about the poor understanding of basic principles shown by graduates who know about very advanced topics. The quite able students who find present courses a struggle might be better served by work with which they could develop more confidence and mastery.

The dilemma here is whether to attempt more modest targets, and to face the paradox of cutting syllabuses drastically and so giving the appearance of having rather low-level courses, in order to improve the quality of graduates.

Apart from raising fears about status—only departments of high prestige could dare to do such things—there is a more fundamental difficulty. To attempt to trade range and sophistication in exchange for deeper understanding and better application, and to do this on behalf of the less able undergraduates, involves assumptions about the best ways to use and develop students' capacities.

How do we decide whether it is better for a graduate to learn how to score half marks on easy questions about difficult topics than to learn how to achieve the same score on difficult questions about easy topics?

The arguments for better understanding at the expense of more modest content acquire further weight if the pure science curriculum is justified as a training of the mind, of value even for those who will not be research scientists.

Even if science lecturers accept, under the spell of the great debate, that the education they offer should serve productive industry, there is still difficulty in working out the implications of such acceptance.

For example, a physics lecturer will know that his final-year class will spread out to pure research, postgraduate training, teacher training, accountancy, management and so on, and he must reassure himself that what he has to offer has value in all of these occupations. The belief is sustained both by arguments about training of the mind and by arguing that the content of pure science courses has relevance because it is the basis of modern technology.

The first of these arguments needs critical examination. It was used in the past to justify the classics, and they were less expensive. The second is fragile because if one started to construct a curriculum concerned with understanding the basis of modern technology, it is not obvious that a single subject pure science study would be the outcome.

The skills and attitudes actually developed in pure science courses may well be of value in many areas of graduate employment, if indeed they are the same as the skills and attitudes that characterize scientific enquiry. However, the relationship of the lecture-examination cycle and the laboratory composed of set-piece exercises to these desirable characteristics is not obvious, and the task of formulating this relationship as a set of propositions that could be usefully argued or tested has received little attention.

The emergence of many teaching innovations to supplant the traditional methods has brought confusion as well as stimulus, and the enthusiasts have often been met with fears of their gimmickry, fears of their tendency to increase teaching loads, and worry about their failure to allow for the bewitchment of mere novelty.

However, there is one recent development, the inclusion of experimental project work, which is well established in the undergraduate curriculum in several subjects. I would justify this by arguing that the style of work and the skills and experience that are gained in it are very close to those of authentic scientific work.

A radical lesson emerges if we try to think of other activities using criteria of this type. The component skills needed in or developed by various facets of scientific work—those concerned with model making, mathematical formulation, design of investigations, communication of results and so on—could be identified, and a serious attempt made to see how they may be developed, separately and in synthesis, in various learning activities.

Several groups have made a start on such work. It is significant that in the field of industrial training there is also a growing interest in the analysis of skills and the identification of those common to the needs of many occupations.

But project work is not just "good" for students. It frequently arouses interest and commitment from students and appears to them to be of value in itself and to be relevant to their choice of career.

These reactions are not restricted to projects alone; one result of a study of various aspects of undergraduate courses (to be published soon by the Higher Education Learning Project) shows that when students talk about their work both on projects and on other activities, such as essay writing, in which they have individual responsibility for a task, their accounts refer to feelings of independence, possession and achievement. Such feelings are absent from parallel descriptions of lecture courses, even when these courses are seen to be valuable.

This ought to be a challenge. Another result of this study has underlined the obvious in confirming that to most science undergraduates, "following" a lecture course seems to be their most important learning activity. Here there is a simple obstacle in the fact that some lecture courses still fall below that decent minimum of professional competence which would be regarded as essential in other fields, notably research.

Ways in which staff can come to recognize and admit this weakness, and can be helped with it, need to be found, and the need is urgent in science where students rely on courses both as their way in to a new subject, as the definition of its scope for them, and all too often as their sole guide.

But even given good lectures, the pattern of "following" a course needs to be altered by activities which can lead the student to invest more of himself in the work. Keller Plan is too expensive for general use with large classes, and although small group teaching could achieve far more than it does, it is hard to see it playing a major role on its own when student-staff ratios are rising to 10 to 1.

Simple arithmetic suggests that personal interactions with staff can only be achieved frequently with large tutorial groups, so that activities which stimulate and build on students' individual work and in which a scientist can interact with groups of (say) 15 students might be worth exploring further.

One method is to give prepared tasks to sub-groups each of three or four students, who work independently and then come together to compare progress with one another and with a tutor. This method has been used for several years in work on component skills in physics at Birmingham and has recently been taken up by several other physics departments.

The two criteria suggested above—of looking for development of skills and attitudes and of enhancing the student's responsibility for his own work—need a third to complement them, for the outstanding teaching resource is the staff.

A teaching method should be judged by the opportunities it can provide for staff to be instructed by their students about the problems of learning, and by its potential for encouraging staff to show the skills and outlooks which they possess as practitioners of science. This raises the question about whether staff can give students anything more than their experience as pure scientists, and so leads me back to the debate about the curriculum.

Propositions to alter science curricula so that they can pursue broader aims produces a confused and contentious debate among science lecturers and professors. Confusion often arises because the broader aims are interpreted in diverse ways.

Some argue the virtues of being able to choose something that you fancy—renaissance music will serve as well as factory management for this purpose. Others look for a broader view of science as a human activity—and so require courses in the history, philosophy or sociology of science.

Neither of these scores high marks in the great debate about relevance to national survival, which calls for work on the role of science in technology and in productive industry.

Dissension arises between those who regard some or all of these as valueless, those who see them as valuable, but out of place in the examined syllabus, and those who recognise them to be valuable but outside their competence as teachers who must speak with scholarly authority.

There is no agreed answer, but I find it hard to see how pure science training can be justified by a presumption of relevance to wider needs if we do not accept the duty of examining this presumption with our students. To do nothing is to add a powerful influence to the one we already exert by the act of providing our courses and advertising their attractions.

It may be posible to solve the difficulty of the staff's competence in any attempt to broaden education by cooperation with other faculties, but it may also reflect on the recruitment policies of science departments, and on the scholarly activities which they validate as research in their own subjects.

A teaching group with staff whose academic interests in their scientific subjects, whilst having a strong majority base in pure research, could also include study of or involvement in its industrial application, research in the history or sociology of their subject, and research into its educational problems might be well equipped to tackle the problems of the science degree curriculum outlined above.

Something may be achieved if those whose pure research can no longer be supported had the appetite to develop interests in new but related fields of scholarship. Those who attempt this will need more support than they are likely to get.

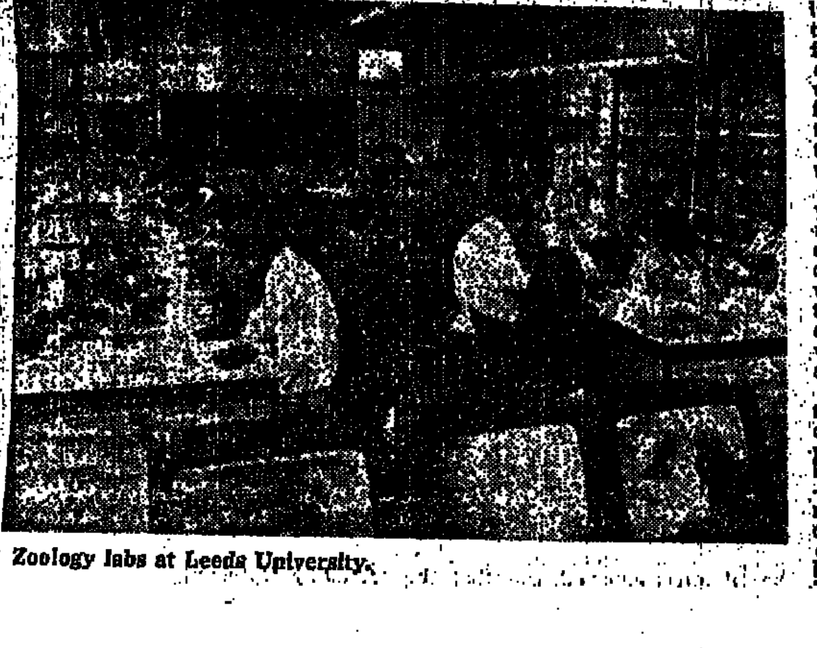
It is not easy in a science department to do research that is not pure science itself, and to demand respect for it. The assumption by some that one is a second-class citizen may be a sociological phenomenon with no basis of scholarly principle, but one's self-esteem and career calculations depend on the sociology rather than on the principles.

It would be a mistake to pursue these or other responses to change unless they were founded on some developed thought about the role of academic institutions as a whole and about the place of science in their cultural activity.

It might be a greater mistake to make no response at all, for there is a danger that many scientists might feel themselves deprived of the means to pursue the only scholarly work they want or are able to do, and might lack the will to find any new role as practitioners or scholars in science.

If a substantial proportion of science lecturers were to retire hurt from the field of scholarship then no amount of curriculum planning or new teaching methods could rescue degree teaching from sliding into an abyss.

The author is director of the Centre for Science Education at Chelsea College, University of London.



Zoology labs at Leeds University.

THE TIMES HIGHER EDUCATION SUPPLEMENT 5.11.76

European scientists back UK gene guidelines

from David Dickson

STRASBOURG

Susan Wright on British and American approaches to the control of genetic experiments

Quis custodiet custodes?

'Frankenstein' project given go-ahead in US

While the public storm over gene transplant research and development continues this week in America at a major conference organized by the National Academy of Sciences, plans to facilitate and regulate this work in Britain appear to be moving smoothly ahead in a much more restrained fashion.

But the American experience should not be too readily discounted as merely a reflection of cultural differences, and there are useful lessons to learn from a comparison of decision-making in each country, and from examination of the extent to which questions being raised on the other side of the Atlantic have found answers here.

In gene transplantation, recently discovered enzymes are used to cut sections of DNA from the cells of a donor organism, and splice these fragments into the DNA of a totally unrelated organism, the resulting hybrid genetic material being known as a "recombinant DNA molecule". In this way, DNA fragments inserted into carriers such as plasmids (small circular pieces of DNA) or bacterial viruses can be transferred into the cells of recipient organisms such as bacteria.

Bacteria implanted with foreign genes will reproduce those units as they multiply. And future refinements are likely to make it possible to "turn the genes on", enabling them to code for the proteins normally synthesized in the cells of the donor.

This power to construct novel organisms has been hailed as a prodigious advance, promising great gains both for science and for society. The techniques are seen as powerful tools for probing the structure, function and regulation of genes—knowledge that could lead to an understanding of such medically important topics as the mechanism of antibody diversity and the action of cancer viruses.

Beyond scientific and medical advances, it is also believed that the techniques have an immense potential for industrial applications. Wheat and other important agricultural plants might be endowed with their own nitrogen-fixing genes, thus eliminating the need for artificial fertilizer.

And if the genes of higher organisms can be turned on in bacterial cells, bacteria could be used as miniature factories to manufacture a whole range of substances, such as insulin, growth hormone, antibodies and enzymes.

The capacity to create new forms of life seems to provide a technological power of a totally different order of magnitude from earlier forms of biological manipulation. According to Dr Sydney Brenner, joint head of cell biology division at the Medical Research Council's Laboratory of Molecular Biology in Cambridge: "Yesterday we had steam age genetics—today we have the jet."

But it is now almost a truism that as the power to modify natural processes increases, so too does the power to disrupt them. Proponents and critics alike have recognized that possible "benefits" could turn into "costs" should newly-engineered organisms escape from the laboratory and disrupt the balance of the biosphere, or infect its human components.

Although proponents often see such dire scenarios as highly unlikely—particularly if safety precautions are enforced—some of genetic manipulation's distinguished critics do not agree. Dr Robert Sinsheimer, chairman of the biology division at the California Institute of Technology, for example, said last year:

> I appreciate that very strenuous efforts will be made by means of physical and biological containment to bar the release of those organisms considered to be of significant potential hazard. Considering all the unknowns of pathology and the uncertainties of evolutionary process, I am not very confident we can know which are the more hazardous combinations. Nor, knowing human frailty and the perversity of objects animate and inanimate, can I feel much confidence that in the long run these plasmids and viruses and organisms can be contained, any more than were the deadly strains at Fort Detrick, or in another sphere, the plutonium-containing wastes at Hanford. . . .
>
> We need apply the same rigor and honesty to these questions that we apply to our science. Nature will be no more tolerant of an erroneous hypothesis.

At one level, the arguments on either side amount almost to who thinks who is best at playing God. And, since there is no body of experience to draw on to test opinions, this clash of values is reflected in uncertainty and sharp disagreement on such basic questions as the level of risk, and the effectiveness of containment.

Gene transplantation may also have a significant impact on the social relations of molecular biology. In their present degree of development, the techniques show more clearly than other forms of biological engineering a striking congruence between the aims of scientific inquiry and the purposes of technology—the product in each case being a new life-form.

Leading practitioners are affiliated not only with institutions for basic research but also with industry. Research is supported from both sources. And knowledge pertaining to the techniques will be marketed through patent mechanisms. While the invisible hand arouses much less ire among scientists than direct pressure from the public, its effects on science, if science leaves the academic environment for the market-place, may be profound.

Decision-making both in Britain and in America has focused on the short-term implications of the techniques involved. Concern over the immediate health hazards resulted in 1974 in a partial suspension of work, initially in the United States and subsequently in Britain, which was followed the following year by an international conference at Asilomar, California.

At the conference, leading practitioners decided to lift the moratorium and replace it by broad guidelines for all experiments, except for a small class judged to be of extreme hazard. The task of drawing up detailed guidelines was then left to national committees in each country.

In America, this was carried out by an advisory committee to the National Institutes of Health. In Britain, guidelines were drafted by an advisory committee to the Department of Education and Science chaired by Sir Robert Williams, following an assessment of the problem by committee set up under the Advisory Board to the Research Councils chaired by Lord Ashby.

An important difference between the two approaches concerns the form of implementation of the guidelines. In America the main responsibility for assessing the risk of an experiment and determining appropriate containment precautions will fall to the principal researcher. She or he will be answerable to an NIH review group known as a "study section", composed exclusively of scientific peers.

In Britain, on the other hand, local responsibility will fall to a biological safety officer and a safety committee. Their assessments will be reviewed by a central advisory committee known as the Genetic Manipulation Advisory Group (GMAG)—a body which could have considerable legal muscle under the Health and Safety at Work Act of 1974.

American and British treatments of the problem also differ in two other respects. The British guidelines will apply uniformly to all research in this area, whatever the source of funding. The American guidelines, on the other hand, at present apply only to research funded by the NIH and NSF.

It seems likely, however, that legislation in the near future will close this major loophole in the United States. In addition, it has been clear that the American decisions have been largely controlled by practitioners of the techniques. There is a sense of the fox guarding the chicken coop, not easily reconciled with the broad principle of separating the activities of promotion and regulation.

In Britain, on the other hand, decision-making has been perceived to be largely independent of vested interests in the techniques. And this sense of independent control will no doubt be reinforced by the image of the GMAG, a group which includes public and trade-union representatives.

However, similarities between the two processes are possibly more fundamental than differences. Decision-making in both countries has proceeded under government agencies oriented towards promotion of biological research rather than control and regulation of hazardous technology. This has naturally resulted in the formation of decision making bodies which were similarly oriented: the great majority of decision-makers in both countries have been either front-rank researchers or directors of research institutions.

Even on the GMAG, scientists and research directors outnumber those with no direct or indirect interests in the techniques by about three to one. (The ratio is more extreme than one might expect from a cursory glance, since two of the four trade-union members also happen to be practitioners of the techniques.)

In addition, major policy decisions in both countries were made prior to the review process. In fact, the GMAG and American study sections will operate under policy frameworks which are very similar: in each case, the basic assumption is that work in this area will proliferate before the risks have been properly characterized.

Given the uncertainty which surrounds critical aspects of genetic manipulation, there are good reasons to explore policy alternatives for this emerging technology with care. However, if we look back at decisions taken in Britain, we find that explicit consideration of policy options has not yet taken place.

The Ashby committee was set up as a purely technical committee to evaluate costs and benefits. The Williams committee was charged with the drafting of a code of practice for research.

There seems to be a distinct policy gap that has so far not been filled by any formal body. As a result, some important questions remain to be considered. What, for example, is the potential for biological disruption when these techniques are used on a massive scale in industry? What is the potential for deliberate misuse in biological warfare or terrorism?

Should universities inadvertently encourage either of those possibilities by training an exponentially increasing number of students in the techniques? How will investment in a complex and hazardous technology damage investment in alternative and safer areas of research and development, either directly through displacement, or indirectly through the efforts required to ensure safety?

Is the policy being adopted in Britain applicable to other countries which may be less stable both geologically and politically? What policy will best ensure reversibility of investment in this area if future experience shows that the risks are severe?

It all sound familiar. These are the problems of high technology, which society is attempting to deal with in other fields, often after the fact of major disaster. Perhaps before yet another potent technology proliferates beyond control, this might be the right moment for major national commissions in each country to take a careful look at the world which genetic manipulation may bring about.

The author teaches the history of science and technology at the University of Michigan, and is currently carrying out research into scientific decision-making in Britain.

Campus heroes meet in a sci-fi embrace

Pat Parrinder reviews the Science Fiction Theatre of Liverpool's production of *Illuminatus!* at the National Theatre

How fitting that *Illuminatus!*, the opening production at the National Theatre's new "fringe" auditorium, should itself be full of initiation rites.* George Dorn, a Carl Bernstein-type investigative reporter, is introduced to the darker side of sexual liberation in the county jail at Mad Dog, Texas, and to its brighter side by the League of Dynamic Discord, whose practices include the full frontal penetration of a giant apple.

R. P. Drake, a future Syndicate boss, learns how to grasp the reins of power through successive meetings with Carl Jung, Herman Hesse and H. P. Lovecraft. The audience are introduced to the semiotics of the dollar bill, to the numerology of the number five (pentagram, pentacle, Pentagon), to a terrifying anthropological puppet-show and a black mass featuring an incontinent goat.

Finally, Dorn is the medium for the manifestation of Liviathan, who is introduced to his future mate, the First Universal Cybernetic Kinetic Ultramicro Programmer (FUCKUP). It may sound as though all this should be labelled "for addicts only", but in fact Ken Campbell and Chris Langham of the Liverpool Science Fiction Theatre have invented the ultimate cure for "epiphobia"—fear of eight-and-a-half-hour dramatic productions.

Illuminatus! is a five-play cycle based on Shea and Wilson's fictional triology, which is the latest campus craze in America and (if one can believe *Time Out*) more popular than Tolkien and Vonnegut put together. For anyone who still remembers the 1960s, however, *Illuminatus!* is also an intensive nostalgia-trip.

Here are all the cult-heroes again—Timothy Leary, William Burroughs, Buckminster Fuller, Ian Fleming, Bonnie and Clyde, the Weathermen, Abbie Hoffman—the authors' name-dropping is prodigious. The CND symbol reappears as a wheel of torture and the Kennedy assassination is seen through the (unused) gunsight of Lee Harvey Oswald.

Yoga, LSD, flower power, the Chicago convention and the magic mushroom are all thrown into a witches' cauldron of conspiracy and counter-conspiracy, illusion and counter-illusion.

The plays have elements of expressionist fantasy, surrealist crime-thriller and political farce. Science-fiction specialists tend to be grateful, if mildly embarrassed, that the result has been classified as belonging to them.

Shea and Wilson have obvious debts to Burroughs and Thomas Pynchon, and make coy references to virtually every other twentieth-century experimental writer. Their plot concerns a conspiracy of men working towards transcendental illumination and prepared to reach this goal through massive human sacrifice—a conspiracy as old as humanity itself and instigated, we are to suppose, by intruders from outer space.

The Illuminati fomented the French and Russian revolutions, and are in control of Nazism, Stalinism, the Pentagon and the Mafia. They engineered the political assassinations in America in the 1960s (to prepare the way for further law-and-order legislation) and are on the verge of provoking World War Three. Their principal opponent is Hagbard Celine, anarchist outlaw and twentieth-century Leonardo, who expounds his principles with Shavian panache to the bemused George Dorn.

The theory that the official history of society is a cover-up for the secret, shameful and consequently *real* history is one of the mainsprings of nineteenth-century realism, above all in Stendhal and Balzac. In postwar American fiction this became the idea of an all-pervasive conspiracy controlling and conditioning everyone, thus neatly reflecting the paranoid quality of American politics from McCarthy to Watergate.

Neil Cunningham's Celine and Chris Langham's Dorn are two precocious students undergoing the initiation rituals of this society: fumbling with acid, their sexual needs (is homosexuality necessary to cement their relationship?) and the temptations of power, and trying out the roles of aesthete and radical, mentor and pupil, Socrates and Glaucon.

It just happens that the setting is not one of bare campus dormitories but a golden submarine bound for Atlantis, plentifully stocked with beautiful devotees of the goddess Eris. The resulting conjunction of sophomore humour, manic erudition and *Playboy* fantasy is indeed typical of a great deal of science fiction of the past decade.

David Rappaport as the dwarf Markoff Chaney.

Imagine that you are a second-year student taking courses in mathematics, cybernetics, physical anthropology, Eastern religion, creative writing and nineteenth-century English literature. 1968 may be several years back but memories of sit-ins, the draft, demonstrations and state police armed with canisters of Mace still hover around the campus. (If you are a girl, you carry Mace in your own handbag.)

Slowly it dawns that the knowledge you are being fed with must be all interconnected, and that the authorities turning your brain into a computer with segregated memory-banks must have some sinister reason for doing so.

Like much present-day science fiction, *Illuminatus!* is deeply hostile to science and aspires to the status of universal history while bearing out Henry Ford's precept that history is bunk. In this story it is the bad guys, the apostles of mass robotization, war and annihilation, who are really a conspiracy of scientific materialists.

The world is saved from their clutches by student anarchists dispensing psychedelic potions and enriched by the discovery of the lost statues of Atlantis. Add that the magician Hagbard is a Shavian diabolic rationalist while the materialistic Illuminati work through torture, mass-hypnosis and the properties of the pentagram and the Tarot pack, and we reach the epicentre of the authors' anarchic message: "The crazier it is, the more likely it is to be true." "Feeling paranoid? Good."

The potentialities of science fiction in the theatre have been little explored (the only critical article I can recall on the subject was published in Russian). As against film or literary narrative, the stage imposes its own sharp distinctions between realism and magic. By pruning and re-ordering the text, and playing off sharp-edged dialogue against spectacular sound and visual effects, Campbell and Langham have notably tightened up their hectic literary source.

Illuminatus! is what the Cottesloe should be all about, and one can only be grateful that London now has a subsidized theatre capable of staging it. There are nine performances left, and it would be surprising if there are any empty seats.

The author lectures in English at Reading University.

*Illuminatus! *By Ken Campbell and Chris Langham, at the National Theatre's Cottesloe Theatre every Friday, Saturday and Sunday* (2 pm *until* 10.30 pm) *until March* 27.

NORTH AMERICAN NEWS

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Mr Carter restores most budget cuts

President Carter has restored nearly all the major cuts made by his predecessor in the education budget, recommending an increase of $1,400m for the education division of the Department of Health, Education and Welfare.

The President's revision of the Ford Budget gives education $9,100m for 1978 compared with $7,700m and includes enough money to raise the maximum Basic Opportunity Grant to students from $1,400 to $1,600 a year.

The National Science Foundation will get the full increase proposed by Mr Ford, with a budget of $889m, and there will be an extra $5m added to funds for biomedical research at the National Institutes of Health.

Altogether, higher education will get $833m more than Mr Ford proposed. The bulk of the total $3,290m will be spent on student loans. Some of the loan programmes which Mr Ford decided to eliminate have been restored. One, however, the National Direct Student Loans, will not get any more money because it is reckoned repayments of earlier loans will be enough in 1978 to permit new loans to more than half a million students.

The Basic Opportunity Grants will be made eligible to an extra half million students from families with incomes between $13,000 and $17,000, now above the cut-off point. The new maximum of $1,600 is still not as much as the $1,800 authorized by Congress last year, and the increases will not take effect until the 1978-79 academic year.

Mr Carter also proposes more money for work-study programmes—$390m compared with $250m—which will please the many students who depend on part-time work provided by their colleges and universities to pay for their tuition.

The new Administration, however, wants to limit social security payments to students to the maximum Basic Opportunity Grant award. Mr Ford wanted to phase out social security payments altogether. They are made to college-aged children of insured workers who have died, retired or become disabled. The amounts are based on the parent's average earnings under social security.

As a token of the Administration's determination to attack discrimination more vigorously, the budget for the Office of Civil Rights at HEW goes up from $33m to $35m, with much of the increase earmarked for the enforcement of regulations banning sex bias in educational institutions.

Considerably more money is proposed for health professions education, with increased scholarship funds for medical students agreeing to serve in areas of shortage, and more money for training in family medicine and primary care, the reorganization of health care is going to be one of the main concerns of Mr Joseph Califano, Secretary for HEW.

As with Mr Ford's Budget, all these figures are just the basis on which Congressional Appropriations Committees—which have the final say on how much money goes to education—will work. They are clearly more appealing than Mr Ford's proposals for education spending, which Congress repeatedly rejected in the past as being too low.

Johns Hopkins tops defence contracts

Johns Hopkins University received more than $106m in military research contracts from the Department of Defence last year, according to Pentagon figures. Together with the Massachusetts Institute of Technology, the two universities received far more money than any others of the 79 that were included in the list of the 500 largest research contractors.

In order, the top 10 were: Johns Hopkins (getting $106,091,000), MIT ($100,788,000), Stanford Research Institute ($24,307,000), University of California ($18,256,000), University of Southern California ($12,999,000), Pennsylvania State University ($10,995,000), University of Rochester ($10,464,000), University of Texas ($6,942,000), University of Washington ($6,775,000) and Stanford University ($6,614,000).

Altogether the 79 colleges and universities held contracts totalling $406m. Over the years this total has remained fairly constant, but it has been distributed among fewer and fewer institutions.

Last year some 100 non-profit institutions (including the 79 universities) got defence research grants totalling $682m. In 1968, 131 non-profit institutions (including 102 universities) got $665m.

The high total for Johns Hopkins, a small and prestigious university oriented mainly to medical research, is easily explained. The university's applied physics laboratory, some miles from the main campus, has, since the Second World War, been virtually under contract to the Navy. Its research is therefore funded every year by large grants from the Department of Defence.

The Massachusetts Institute of Technology has a large laboratory—the Lincoln Laboratory—which is sponsored by the government, though run by MIT, whose research projects are specially geared to national defence needs.

Call for major Ne York shake-up

A report by a state commission in New York says two of America's largest academic institutions the City University of New York and the State University of New York should be broken up and reformed into two new statewide systems. The proposals have been strongly criticized by both institutions.

The report, by the special commission in Albany, the state capital, looking at the future of the troubled City University, says that to overcome the immediate crisis the state should give CUNY's four senior colleges an extra $10m next year to avoid permanent damage to their "durability and integrity".

In the long term the present administrative units should be regrouped into two new systems. One, tentatively called the "University of New York", would consist of CUNY's graduate centre and its four oldest colleges—City, Queens, Hunter and Brooklyn—as well as the State University's campuses at Albany, Binghamton, Buffalo, Stony Brook and a few other units.

The other system, the "Empire State University", would include the remaining City and State colleges organized into three regional groupings.

These proposals have so far been outlined only in general terms in a letter from the Postsecondary Commission in Albany to Governor Hugh Carey and the state's legislative leaders. A full report of their plans for strengthening the governance and financing of New York's higher education system is due at the end of the month.

Any move to break up SUNY would certainly create enormous opposition—if only because SUNY has only been in existence for just over 25 years, and is now establishing its reputation in a nu fields.

CUNY would be equally c - the break-up would signal t of the last great municipal versity in America. But CU not well placed to argue wi state. The body blows of th two years have taken their to university has lost 24 per c its staff. And it is now havin culty finding enough studen

Recruitment for next year is by more than a third: only pupils in their last year at s have applied for admission in tember so far, compared with this time last year.

CUNY is worried because in aid is linked to enrolment. Th versity needs at least as mu year as it got last year. To bolster flagging applications tensive campaign has begun city' schools: counsellors recruiters have been se with power to admit s "instantly". They are exp how the university's financ scheme works, more necessa that CUNY has been forc impose tuition fees.

Many factors have comb produce this sharp drop: th general uncertainty about th emic future of CUNY after tw of publicity over its financial poorer, less qualified studen generally not aware of the fi help available to offset the imposed tuition fees; and th eral suply of college-aged stude beginning to shrink, reflectin fall in birthrates that began years ago.

The City University is now urged to use the fall in applic as a way of going through the ful contraction necessary in whole system without disapp potential students.

Leader, p

Research freeze ends

The Canadian government's unpopular freeze on funds for university research has ended. Estimates before Parliament propose a rise of 12 per cent next year in the budget for the three research councils, and Mr Hugh Faulkner, federal Minister of Science and Technology, has reaffirmed Ottawa's commitment to basic research in universities.

The proposed increase in funds of $20m will be the first since a small interim rise was approved for the Medical Research Council last year as a result of an unprecedented campaign by doctors and biologists. The other two councils have had their funds held at 1975 levels.

For 1977-78 the estimated funds for the councils will total $181m. The increase also allows an extra $8m for improving the regional balance of scientific capabilities, the support of interdisciplinary research and for "national problem areas"—energy, oceanography and the environment.

Reaction from the Canadian Association of University Teachers, one of the organizers of last year's campaign against the freeze, has been cautious. A spokesman said they had heard promises of better times before, and wanted to see the final figures first. Many researchers will also be disappointed that the increase will still not bring them back to the level of 1970.

Acknowledging this, Mr Faulkner said in a speech to the Canadian Society of Clinical Investigation in Toronto that the latest increase would none the less "mark an important turning point".

He also argued strongly for a national system of research grants based on peer review. This he said, was the best way of deciding which projects should be supported. It brought together the best minds in Canada in the various disciplines and sometimes even from abroad. Through the process of peer review, standards were raised across the country.

But to be successful the system should also be national. "It seems to me that it would be difficult, if not impossible, for any provincially-based review system to match the depth and breadth of one that is national in scope."

Mr Faulkner welcomed the provinces' increased support for university research, but urged them not to become inward-looking. And he asked the federal research councils "to recognize the legitimate linguistic or cultural traditions of the provinces".

Canada's research councils are themselves in the process of reorganization. The Bill to split up the National Research Council, the Canada Council and the Medical Research Council has now had its second reading in Parliament (*THES*, January 21). On the whole the changes have been welcomed by the councils—though the Canada Council has reservations. The promise of extra federal money may well be an inducement to smooth the passage of the Bill.

The whole debate over the freeze during the past months has led to another important development: the founding of a federal/provincial Committee on the Financing of University Research. So far this has held only one brief meeting, but it is a forum where the federal and provincial authorities can at last work out some joint policy on what is a vital issue for Canadian science and learning.

Cornell urges less stress on specialization

The Great Debate over undergraduate education has now begun at another major university in America—this time Cornell. A report by a special committee proposes limiting the time students devote to their main specialization and directing them to study a range of subjects. A Board of General Education should be set up to supervise the changes.

Cornell, however, unlike Harvard, does not recommend going back to a compulsory core curriculum. This is a question of some contention on the campus, with a number of teachers, including Dr Carl Sagan, the distinguished astronomer involved in the Vikings' Mars experiments, strongly supporting a compulsory core.

Cornell students are organizing a seminar on the report next month, and the university's academics are to debate it in departmental meetings.

The report was commissioned 18 months ago because of considerable unease in the university over the narrow student interest in vocational courses, and a feeling that undergraduate studies were becoming unbalanced.

"In some fields Cornell seems to be overpreparing its undergraduates: they leave for graduate school with advanced training in all aspects of their general subject, and need only to engage in narrowly specialized research to complete the requirements for an advanced degree", the report says.

To counteract this, it recommends providing undergraduates with different kinds of opportunities and obligations. This does not mean a required set of readings, or an agreed core curriculum—though the effect of having to choose courses in different disciplinary areas amounts to almost the same thing, according to Dr Harry Levin, Dean of the College of Arts and Sciences.

The report says that a student should spend at least 32 hours on work outside his area of specialization. What he should study in 24 of these is prescribed according to his "major"—the rest is up to him.

In the case of a chemistry major, for example, a student could satisfy the proposed distribution requirement by taking a total of eight credit hours in courses in the biological sciences, the history of science or the philosophy of science; eight hours in anthropology, linguistics, psychology, sociology, government or economics; eight in the classics, history, literature, philosophy or the performing arts; and eight more distributed among any of those fields.

But a chemistry major would not be able to take courses in the physical sciences or in mathematics, both of which are intrinsically tied to his major field.

The report also suggests setting up new interdisciplinary courses showing the relationships between subjects. As examples it gives: the evolution of modern science, the uses of numbers, the phenomenon of time, science fiction, the concept of intelligence and the humanities and the tradition of controversy.

To develop these, the new Board of General Education should be set up. This would get the teaching staff to suggest new courses, make sure the distribution requirements were fulfilled, and "in short, nourish the strengths and advocate the cause of general education just as vigorously as the departments now support their own more specific professional aims".

Other proposals include a stiffening of the foreign language requirements, extra emphasis on instruction in writing (the university has just appointed a special dean of writing) and stopping any department insisting on more than 60 credit hours out of the total 120 required for graduation.

... And Canad worries about literacy, too

Worry over declining standard literacy among university stu does not stop at the 49th Pa A new report by the Associ of Canadian University Teacher English is strongly critical deficiencies in the teaching English at schools, the prolif tion of alternative English co in Canadian universities and general lack of rigour in the tea ing of the subject.

Apart from the top 15 per c new students were far less prepa in English than they were in t past, says the report. It blames te vision, the decrease in the ti spent in English in the schools especially on the study of gram —the abandonment of exter examinations and poorer qualifica tions among English school teache

At university level the rep criticizes the recent developmen most provinces of substituting th Bachelor of Education degr which usually has minimal req ments for English study, for t Bachelor of Arts degree, follo by one year of teacher trainin the normal qualification for t ing English in high schools.

Since it is impossible to start ing everybody, however, univers have a choice of steadily lowe standards or trying to do some with the incoming freshmen, the port says. It does not think it the job of universities to reme the deficiencies of school tea but admits that there is no a native. "University teaching of fundamentals of English comp tion and of comprehension can nothing but an emergency mea a stop-gap of limited effectiven to be abandoned as soon as th emergency itself can be resolved it says.

There is no criticism of the and teachers of English in Canadian u versities. They are praised for the competence, abilities and enthu asm, but one difficulty, the repo says, is the lack of opportunities young Canadian scholars. There a tendency to fill a vacancy wit senior person from abroad to a prestige to the department.

Holland

Open University proposed

from Lynn George

AMSTERDAM

An ambitious system of "open" higher education for adults should be introduced in Holland, according to a report by two Government commissions.

One of these, the Commission for Developing Higher Education, was set up in 1970 as an advisory body and has significant influence on matters related to changes in tertiary education. It recently recommended the setting-up of general three-year higher educational courses which are now expected to start in 1978.

The other compiler of the report, the Open School Commission, is already busy preparing a range of second-chance diploma and non-diploma courses up to higher educational level aimed at housewives and working adults. The first of these is due to start in the autumn.

The new proposals, coming under the umbrella title of "Open University", are seen as a link with these courses. The aim is for an adult with little or no schooling to be able to catch up on his studies from beginning to end by using the "open method of studying".

At present part-time higher education for adults is limited to a few courses within the higher vocational sector which are attended by about 74,000 students.

In preparing their report the commissions looked at the Swedish, American and English open learning models. The Dutch proposal would involve programmes leading to a doctorate as well as to a wide range of higher vocational, general development, specialist and refresher courses.

Programmes would be split into separate but inter-related parts with each part lasting not longer than one year. This is to allow students to study just one part of a course, or to allow them to temporarily drop their studies and pick them up again easily later.

In some cases the experience of students would count towards exemption from obtaining specific marks in parts of a course.

Final examinations, too, would offer a wide variety of choice. To give students freedom as to how and when they want to study a multi-media system would be used. The emphasis would be on written work, although radio, television, individual and group counselling would also play an important role.

Three organizational models are suggested in the report. The first one is a decentralized model whereby the universities and higher vocational institutes share the entire responsibility of running an open system of higher education. The report strongly comes out against such a structure as being unnecessarily unwieldly in a country the size of Holland.

The second model would give higher education part responsibility for, say, tutoring and examinations but then have a central organization, the Open University itself, responsible for the syllabuses. This model, like the first one, is rejected on the grounds that such a system would strengthen the existing binary set-up which is due to be gradually phased out.

The report favours a completely independent open university model similar to the British one, which is autonomous of higher education institutions, but which makes use of existing educational provisions such as teaching centres and laboratories.

The Open University will be shaped by the already proposed Open School Development Institute which is due to be set up in August 1979 and which will consist of multi-media steering groups responsible for developing this new type of education.

The report calls for a preparatory committee to be set up as soon as possible to decide among other things on necessary legislation and initial programmes.

The academic year has begun in South Africa. Martin Feinstein looks at the troubled future of the country's main White student organization

Union now widely seen as lame duck

CAPE TOWN

South Africa's 70,000 university students returned last month to start the 1977 academic year. In a changing and uncertain political climate, the division between Black and White students has widened, while the ideological gap between White English and Afrikaans seems to be narrowing.

The major development in White student politics has been the fall of the National Union of South African Students (NUSAS) and the emergence of a powerful body of right-wing students.

Once the major force representing English-speaking students, NUSAS is still reeling from the effects of a massive withdrawal of student support last year, when four universities (Rhodes, Port Elizabeth, Pietermaritsburg and Durban) voted in a hotly contested referendum to disaffiliate from the union, cutting off some R10,000 in membership funds. At present four campuses remain affilated, and moves are afoot to hold repeat referendums at the others.

Much will depend on student reaction to the somewhat confusing constitutional changes that NUSAS has undergone in an attempt at a democratization of its leadership. It is unlikely, however, that NUSAS will regain the support it once had, a development which many student leaders see as signalling the end of an era of student activism against the Nationalist government.

Even if the universities reaffiliate, it will be a long, hard struggle for a body that has not yet recovered from being declared an Affected Organization in 1974, a move which barred overseas financial support. In fact, NUSAS's financial position is so bad that its head office has been vacated and it now operates on campuses only.

An attempt by the union last year to launch a national university newspaper, the *National Student*, failed after the first issue due to financial problems and government harassment, although an attempt is being made to revive the project on a shoestring budget.

The union's difficulties have been made even more acute by the emergence of a new conservative union, the South African Federation of English-Speaking Students (SAFESS). Although it seems to have attracted only marginal support on English campuses, SAFESS is making headway in establishing a rapport with the powerful pro-government Afrikaanse Studentebond, which monopolizes Afrikaans student support. The ASB is far more willing to cooperate with the right-wing SAFESS leadership than the anti-government NUSAS executive.

One disquieting feature is that SAFESS refuses to disclose its sources of financial support, particularly for its newspaper, *Campus Independent*, which has led to speculation that conservative business interests or even the government are involved.

Black universities, meanwhile, have been in chaos as a result of the recent unrest, and have been desperately trying to complete delayed exams and courses, disrupted by constant closures during the riots. As increasingly militant Black students become aware of the momentum of the White swing to the right, the prospects for peaceful contact are looking dimmer.

West Germany

Grants set for modest increase

by Günther Kloss

Legislation to raise student grants is to be introduced by the Bonn government. The biennial review of pupils' and students' grants was postponed as part of the cuts in federal spending in 1975, although an across the board 10 per cent hardship increase was paid from January 1976.

For the past few months, unrest among West Germany's students has been steadily mounting. Even the latest official statistics indicate that the DM550 (£137) a month maximum grant is at least DM100 below the estimated reasonable living cost for a student.

Also, the allowances set against parental income before it is assessed have not been revised upwards since 1974, so that, with rising earnings, the required parental contributions have inevitably increased.

This has had the effect of reducing the number of recipients of full awards from 40 per cent of all full-time students in 1973 to 30 per cent in 1976; for tens of thousands of students, grants were stopped altogether.

The federal government proposes a very modest increase of the full grant for students at universities and colleges from the present DM550 maximum to DM580 plus a tiny increase in the contribution paid towards a student's health insurance. Both increases would take effect from April 1.

From October 1 the various allowances deductible from the parental income after tax and social security contributions (calculated on the basis of the year 1975) before it affects the level of a student's grant would also be increased.

This applies, for example, to the basic allowance (from DM960 to DM1,100 a month) and the allowance for each child. A student's income limit before his grant is reduced will also be raised to DM240 a month.

These proposals do not meet the justified expectations of either national student organizations or of the Opposition parties in Bonn. The latter is urging a much more thorough reappraisal of the entire grant legislation.

France

Government seeks streamlining of technology institutes

from Guy Neave

PARIS

Discussions over the reform of the controversial University Institutes of Technology—the two-year applied science colleges—are deadlocked.

In December (*THES*, December 17) Mme. Alice Saunier-Seité, the Secretary of State for Universities, asked the National Education Commission, a consultative body of experts, to make recommendations for wide-ranging changes in both teaching and staff appointments. The commission sent out a questionnaire to the institutes, the results of which are currently being evaluated. They will be published next month.

The Secretary of State hoped the commission would suggest a number of changes in the teaching load and in particular an increase in the amount of individual work done by students. It has not done so. It accepts that more teachers with industrial and work experience are needed to halt academic drift in the institutes. But it has failed to agree on a reduction in the number of compulsory lectures.

This is a setback for the Secretary of State—as a cut in the teaching timetable was one of the main proposed ways of reducing the size of IUT budgets.

In addition, the commission has failed to come up with a clear answer on the participation of industry in the teaching programme. Much depends, it said, on the type of subject involved. To set overall limits would be meaningless.

Now, in an attempt to break through the stalemate the French employers' association is laying down guidelines for cooperation between the IUTs and local industry at regional level.

Recently, two other issues have emerged. The first is a new development in the area of staff appointments, the second, the problems resulting from the over-expansion of the institutes during the early 1970s.

Part of the deal to gain acceptance for the reforms was to offer tenure to some 300 assistant lecturers. This is going to prove more difficult than was at first thought. In France, those with five or more years' teaching experience in higher education have a right to tenure. Research shows that the number of people in line for permanent posts is far greater than originally estimated.

The second problem is more delicate. Many of the later IUTs, especially in the south and south-west of the country, owed their development less to educational or to manpower considerations than to political manoeuvring. To set up an IUT in a small town not only brought considerable financial benefits, it also served to keep an otherwise ungrateful electorate faithful to its local deputy.

Some IUTs in this position suffer from lack of students. Often they are in areas with few employment outlets for IUT graduates. The Secretary of State is examining the possibility of closing down certain departments and redistributing staff and students elsewhere.

Sweden

Briton heads energy centre

from Mike Duckenfield

STOCKHOLM

A British environmental researcher, Professor Gordon Goodman, is to be the first director of the International Institute for Energy and Human Ecology, recently established by the Royal Swedish Academy of Sciences.

Professor Goodman, aged 50, who has been working on environmental research for 20 years, is currently leading the MARC (Monitoring and Assessment Research Centre) within SCOPE, the Scientific Committee on Problems of the Environment.

The institute is the first project to be financed by the Kjell and Märta Beijer Foundation set up in 1974 to advance scientific research in Sweden.

The foundation has donated 12m Skr (£1.7m) over an initial 10-year period for running costs and 3m Skr for the construction of a building, which adjoins the Academy's premises next to the Stockholm University campus.

The institute is to work along similar lines to the Stockholm International Peace Research Institute (SIPRI), which also has a British director, Dr Frank Barnaby. An international board of scientists led by Dr Jack Hollander of the American National Academy of Sciences will be responsible for overall planning of strategy with Professor Goodman in charge of everyday management. Projects will be undertaken by about a dozen scientists, including guest researchers.

Areas of study are likely to include surveys of energy resources, including solar and geo-thermal energy; energy and the environment, including the protection of the atmosphere; energy and economic development; and energy in relation to other resources such as minerals and food.

Italy

University legislation pledged as discontent goes on

from Patricia Clough

ROME

A University Reform Bill has been promised by the end of this month by Signor Franco Maria Malfatti, Education Minister.

Signor Malfatti announced the move to Parliament in the wake of the still simmering student revolt. He said that one of the main elements behind the student unrest, massive youth unemployment, was a "grave and alarming" problem which reforms alone could not solve.

The promised Reform Bill will be the third to be presented since the 1968 student riots and the fifth in 15 years. It is expected to include a reform of the present one-chair faculties into a department system similar to that in British universities.

The government also proposed three levels of qualification: a diploma, which can be obtained after two years' study, the *laurea*, roughly equivalent to a British Bachelor degree, obtainable after four or more years, and a research doctorate for those wanting to embark on an academic career.

Meanwhile, a national assembly of students at Rome University has called for a day of nationwide demonstrations tomorrow. The assembly, attended by about 5,000 students out of the total of 750,000 was dominated by the extremist groups which are most active in the current rebellion and who often prevented more moderate colleagues, including Communists, from speaking.

The general line was opposition to institutions and parties, rejection of government plans to provide work for young people and of any sacrifices to combat the economic crisis.

Of a completely different tone was a meeting in Turin of life-tenure professors who pressed for limits on the numbers of students entering university. One speaker warned that at the present rate one adult Italian in four would soon have a degree.

Republic of Ireland

Irish ... not needed after all

from John Horgan

DUBLIN

A lengthy wrangle about the need for non-Irish applicants for positions in third-level education to have a speaking knowledge of the Irish language has been finally resolved with the appointment of a Scots educationist to the £6,500 post of principal of the multi-million-pound Technical Institute in Limerick.

The new principal, Mr Justin Togher, of Napier College, Edinburgh, originally applied for the job and was selected by an assessment committee. The Minister for Education, however, refused to ratify his appointment on the grounds that he did not know any Irish. The Irish requirement had been omitted from advertisements for the post which appeared in overseas publications, although it had been included in advertisements published in Ireland.

The post was subsequently re-advertised twice, the second time after the stipulation about Irish had been rescinded. Mr Togher has now been appointed and his ratification is expected as a matter of course.

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Left to right: William Morris, R. H. Tawney, J. D. Bernal, Richard Titmuss, Anthony Crosland.

The declining role of the British intellectual

The British intelligentsia is notoriously hard to define. The names you pick depend, as always, on where you start. "Intellectual" is itself an ambivalent designation in British society: the word has, and no doubt should have, a slightly combative ring about it—not everyone in the senior common room would agree to be called an intellectual, whether he is physicist or philosopher, emperor or clown.

In Britain, there is no *Ecole Normale Supérieure* as a greenhouse for forcing prize intellectuals like Levi-Strauss or Sartre, or the novo-Marxist gunmen like Althusser and the Model Left in Paris; nor is there a *president de soleil* who may every four or eight years, appoint a new cadre of intellectual ideologues to his cabinet and court, as in the USA: the Schlesingers, Kissingers, Rostows and McGeorge Bundys.

The passionate lampoons by Chomsky and I. F. Stone of these men in the pages of *The New York Review* only serve to underline their extraordinary and arbitrary power. The social meaning and placing of British intellectuals is far more elusive.

What you find depends on where you decide to look. If, with Geoffrey Hawthorn in a recent *New Society* article, you look on any old new campus, you find the intellectuals of zero-structure; you find, now ageing a little, the counter-culturalists of the chainstore communards, the once bright colours of Haight-Ashbury now dulled to Grass Roots Incorporated, to the brown rice cuisine, the neighbourhood newspaper, the old dormobile, and the social benefits.

Within its wider provenance, the much sociologized allotment-and-marijuana world of counter-culture was and is doctrinally non-political, but daemonic lyricism in sex or pop avant-gardes flowed naturally into the university's denim radicalism, and gave it a rhetoric and a grammar of motives.

The zero-structuralists are to be found plugging the gaps in the Christmas parties of the glittering prizewinners; *their* intellectual leaders when they speak of politics and vision, appear naturally in the press of the initialled sectarianism of IS, WRP, IMG, or CPGB (M-L). They are the non-party friends of Bill Brand, and it was with a touch whose sentimental nicety was, ingenuously blended with its political prurience that Trevor Griffiths wound up the *Bill Brand* series with a left theatre group called "The Rabble" singing the Cuban revolutionary anthem.

Take a lantern, and seek your intellectuals elsewhere. In a letter to the first number of *The New Review*, George Steiner explained that he would not become a contributor because of what he saw as the certainty of that organ's capitulation to the bright youngish things about literary London, the bankrupt mock-heroics of Clive James, the deadly, clean enlightenments of *The Guardian*'s features page. His predictions, now dreadfully vindicated, are exactly of a piece with Leavis's commination of a previous generation as it transpired in the *TLS* and in the Sundays.

The lurid chromaticism of Kermode's circus—the Fontana Modern Masters series—catches many of both Steiner's and Leavis's targets at their most jauntily self-assured. The main style of those essays deeply typifies what Steiner objected to in the intellectual climate which gives rise to the worst of *Encounter and The New Review:* the inward cadences of thought which find natural expression in London and Oxbridge as a combination of world-weariness and unrelenting condescension in the rehearsal of those beliefs and commitments which have led other men to the foolishness of action and altruism.

Steiner characterized that climate by saying that within it one could find no one who read Hegel, let alone took him seriously, and that is not a bad way of fixing the argument. One of its grislier manifestations was the autobiography of the author of *The History Man* as he potted it in the pages of a recent *Radio Times*, looking back with a fine amused ruefulness at his own and his generation's style in the 1950s as that of "maturity and moral seriousness" (the 1960s, we learn, was the decade of "sex, politics, and liberation", and learning that, readers of the *Radio Times* may well wonder why a few universities should not indeed be closed down).

The era which has gently led the successful academics of the years of expansion into the well-paid, jet-setting cynicism of a Volvo-driving middle-age is not one which would give much other than lumber room to Hegel—or, shall we say, to such a home-grown galaxy as F. R. Leavis, R. G. Collingwood, Joseph Needham, Adrian Stokes, J. D. Bernal, J. D. S. Haldane.

These names make the same point for my purposes as Hegel's does for Steiner. They prefigure in their intellectual lives the movement of a whole history; they live in their society's history, and their work, like Hegel's has meaning insofar as it gives shape and purpose to that history, identifies what is live and what is dead in the times which swirl inanely about them. It is their heroism, in this special sense, to make sense of as large an area of human experience (and all science is human) as they may bring within their minds.

Naming heroes

A society which is incapable of naming its heroes does not know who it is. Many of the popular heroes of our culture are offered as consolations for defeat to those whose aspirations towards heroic values could find no social expression—on the left, the Levellers, the Ranters, the martyrs of long-distance holocaust in Budapest or the Paris Commune; on the liberal right, the pure, ardent spirits of the world war, latter-day Julian Grenfells like Geofrey Keynes and Guy Gibson, who were enabled to transcend the dreariness of bourgeois experience by facing the monsters of Rising Sun and Third Reich, heroes of tank and Spitfire who etherealized history by returning it to the single, simple combat of good against evil.

It's much easier to declare oneself for King or Parliament when historical events force one to some sort of wall. Certain kinds of national crisis are of such an order that they prove all those who live through them in terms of the central values and meanings of that society. A man's actions then become perfectly clear and valid to his fellows. Even those who as a result of such a crisis find themselves in lasting hostility to one another nonetheless agree that events have forced the revelation of the truth about each of them.

The examples of such moments in history are ready, perhaps too ready. Naming them is to name your heroes and therefore your view of the world, its possibilities and your hope for it. I will tell you where I would have hoped to stand at Kronstadt in 1921, in Eccleston Square in 1926, in Accra at the fall of Nkrumah, with Lumumba in Katanga, in Jerusalem in 1967, and you will tell me who I am.

There is no gunpowder nor the dust of enemy tanks in the streets just now. The wistfulness of so many middle-aged and elderly people about 1940, the empty invocations of the Dunkirk spirit, is a measure of the bafflement, the deep blankness which is the strange thing about politics. And my point here is that as the meanings of an intellectual's life become public—so it becomes by definition political, if by political one intends the values we appeal to in order to hold the social world together.

His life becomes so in proportion both to a man's genius and to his opportunity. Universities cannot create genius, but they can create opportunity; they can create the community of lived preoccupation with the possibility of belief and scepticism, without which genius must live off its own fat if it is to live at all.

Polis and politics alike depend upon the creation of values by which men live and die. In the default of others, the politics will be made by the hoodlums, and the polis will be run by those who stand at the right end of a gun.

Intellectuals of all people cannot leave politics to run itself. They face at the centre of their work the bitter contradiction between the deep and universal dishonouring of socialist ideals which the world has seen since the Stalin death camps and treason trials, and the continuing conviction that if a man of principle cannot make his home on the left, then he is exiled for ever.

But who on the intellectual left does not know across the corridor or quite personally the human condition Doris Lessing describes here?

> Yet the Browns were political, like all the people like them; they were political as their parents had been religious. All their adult lives, ever since the war that had formed them, they had been setting their course, holding themselves steady in self-respect, with words like liberty, freedom, democracy. They were all varying degrees of socialist, or liberal. Whom did she know who was not? Yet the truth was she was thinking, and she knew that Michael did, more and more, that it was all nonsense. But they could not bear to think it.

This is not so much the growth of apathy and the condition of leaderlessness which is blamed for the indirection of Britain today. It is more the slow advent of incredulity, which is the way so many people, in and out of the academies, are experiencing a deep change in the frames of mind their class have always worn.

Doris Lessing's couple in their late forties feel the way they do because they do not know what is happening. The self-respecting vocabulary of liberal democracy—freedom, choice, integrity, individuality—cannot bite on the vast, inane facts of life. You can only see facts as facts when you have ideas and know what you are looking for.

It is not merely the function, it is the meaning and duty of intellectuals to tell their society what is happening. In Chomsky's ringing cry: "It is the responsibility of intellectuals to speak the truth and expose lies." That first, certainly; especially if it is your government which is lying. But beyond that, the responsibility is to give society a means of knowing itself.

The relative autonomy of universities—their access to and detachment from the seats of power—gives them all the structural leverage they need. Insofar as what they say transpires from a community of discourse, a shared and fiercely contested construction of the world, it will be heeded.

When you look around, of course, at the dismal mediocrity of your colleagues in actuality and drop your sights from Newman's "delectable mountains", to ask for universities to discharge such a responsibility sounds risible. But the intellectuals are not the university itself; they merely work there. Its idea of itself gives them their undoubted and immensely prestigious power base. They remain a considerable and identifiable force.

Seats of power

When all is said and done about the dead empiricism and anti-theoretic complacency of our social and political theorists, there is still a very formidable array of men and women practising the human sciences in Britain, many of them émigrés cherishing in exile the social values which made this country the natural place to swim to, all of them well able, now the challenge is here, to rewrite a world-picture capable of both resisting and reflecting a dismal new world.

For it is always necessary that social theorists speak not of the impossible but of what might really be done. When Marxists refer to dissident intelligentsia, they look to a social stratum torn apart from its naturally bourgeois base, and able from its *déraciné* position to provide the proletariat with the ground theory required to bring it out of false and into self-consciousness, and thence to power.

But the British intelligentsia has always sat nearer (though never in) the seats of the power élite. What William Morris said really affected what happened to garden cities and thereafter to the Town and Country Planning Acts; what T. H. Green thought became social policy as his pupils and *their* pupils joined Asquith and then Ramsey Macdonald.

The same applies with even greater force to the Webbs, and of course to R. H. Tawney who is, in the face of all one's reservations, the major embodiment of a fine academic ideal in Britain—the intellectual who both keeps faith with the principles of socialism *and* takes an active part in making practical policy and politics.

It is a proper tribute to pay to the memory of Tony Crosland that he was for 20 years a magnificent example of the intellectual in politics. His presence and his books have been a main guarantee of the continuity both of a language for serious politics and an audience among the power élite.

It is that tradition which is still capable of speaking to an always difficult, but not at all doomed, historical future. It is, one would like to think, a tradition capable also of taking strength from the present situation, in which the incredible indolence and leisureliness of so many university lecturers are at last touched by redundancy, less pay and perks, harder work and clocking in more than three days a week.

We have a world in which shortage, joblessness, destitution, the waste lands abandoned when capital and technology move on, poverty, piracy, and grinding self-seekingness, all daily accelerate on their headlong, destructive way. Against these lethal forces, we pit an academic tradition equipped with a vocabulary which can speak of life and death, which can fight destructiveness with the great names of equality, justice, generosity, tenderness, brotherhood. The task in hand is to find ways of giving these names institutional life and embodiment.

In one school, for instance at LSE and its Fabianism-made-manifest, this task is tackled with the tools most masterfully shaped by Richard Titmuss, Peter Townsend, and Barbara Wootton. It has been the peculiar courage of LSE intellectuals to imagine and repair the forms of social welfare so that, in Titmuss's fine phrase, the "gift relationships" shall be cherished.

But it *is* perfectly well to place in the same tradition the school of philosophic *emigrés*—I mean men and women as diverse as Berlin, Popper, Korner, Lakatos, Kolakowski, Gellner, Doris Lessing, Jacobson, and Gombrich—whose bitter experience of totalitarianism led them to fight for the maintenance of a morally excellent rationality in a country whose central and popular meanings gave them just that historical opportunity.

Last, and most powerful, we could take the example of a native vernacular tradition. Its leading practitioners have already been mentioned. Its great strength is as much that of the poets and novelists, who are themselves never far from the universities these days, as it is of the intellectuals.

One of its major creations has been and remains that of English historiography, the tremendously rich and varied body of work completed in the past quarter-century which has both criticized and remade a part of our social memory, and taught us to learn a new set of historical lessons. The new past presented by the historians of *Past and Present* makes us see our own present in a different way and provides us with a different politics to imagine. By the same token, English social anthropology has described a different world for us to understand.

There is no shortage of heroes and of their monuments—the books it is our business to write. There are obvious ways in which to make programmes of what to do. It is a matter, briefly, of life and death: what is live and what is dead in our culture? How shall we name these things, and having named them, what shall we do about them? And whatever they are, whether fast breeder reactors or the poverty trap; whether the meaning of tragedy or experience and conduct, theory and practice are not aridly distinguished. Insofar as the university *is* become a new church, then the intellectuals have both the prestige and the occasion to speak for and to the country. To speak so would be to do no more than their job.

Fred Inglis

The author is lecturer in education at Bristol University.

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The science of certainty

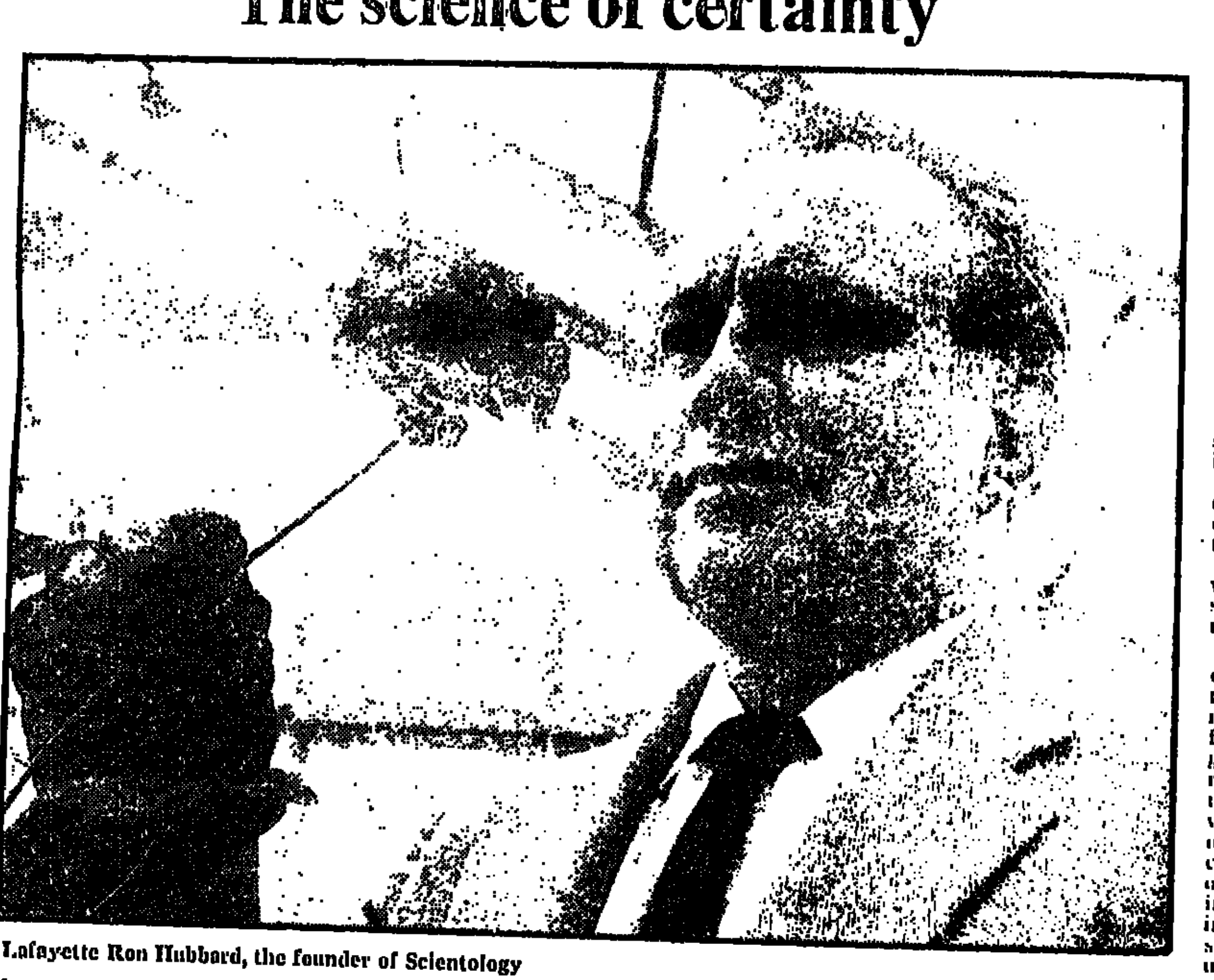
The Road to Total Freedom
by Roy Wallis
Heinemann Educational, £6.50
ISBN 0 435 829165

Even among unusual therapeutic religious cults, Scientology has attained an exceptional notoriety, for which a sensationalist press and the litigious involvements of its own leadership must bear the principal blame. There have also been several hostile books written by former members of the movement.

Roy Wallis has written a book of quite a different kind, which is not only even-handed and cool-headed about so sensational a subject, but which is extremely lucid about subject matter on which the Scientologists themselves by no means always achieve lucidity. If this were all, it would be enough to justify enthusiasm—and enough to recommend the book, even to ardent Scientologists, who cannot anywhere have seen the theory, organization, and development of the movement so clearly set forth. As it is, Wallis does much more. He recounts an absorbing history of the movement, which makes at times gripping reading. And he puts the whole into the context of a sociological analysis that not only makes good sense (not an invariable achievement of sociologists) but which is also a positive and important contribution to the existing theoretical apparatus for the analysis of social movements and religious organizations.

Objective sociological enquiry into any sect is not easy—either for the researcher, who does not want to make his subjects feel like victims, or for the religious movement itself, the entire worldview of which is fashioned by very different values from those that motivate the sociologist. The relationships arising in such studies are always delicate, and a measure of goodwill on both sides is essential if distortion is to be avoided.

In studying the Scientologists, Wallis certainly had more than normal difficulties. Scientologists are taught that only they are working for the future of western civilization, which is threatened by a conspiracy against human rights and human freedom in which psychiatrists and communists in particular, and sometimes politicians, journalists, the police, and even the American Inland Revenue service are involved. Any investigator into Scientology who is not a potential convert is thus a ready object of suspicion, and Wallis learned, if he did not realize it from the litigation that Scientologists had instituted against the writers of other books that they considered hostile, and the harrowing incidents which some of those authors had experienced, that his own intention to publish this study was fraught with risk. He decided to show his manuscript to officials of the movement before publication, and to incorporate into his text their observations on points to which they took exception, and even to include, as an appendix, a critique of his book by Dr. J. L. Simmons, a professional American sociologist who is a Scientologist. In every way, therefore, he has tried to deal with controversial issues with commendable objectivity and detachment.



Lafayette Ron Hubbard, the founder of Scientology

The movement that became Scientology began in 1950, when L. Ron Hubbard, a science fiction writer, published an article in a science fiction magazine on Dianetics, a type of abreaction therapy that he had developed. The appeal of his system was immediate, and a considerable public emerged seeking either therapy or training as therapists, or—as so often in such movements—both. A foundation was set up, but despite public demand, the early history of Dianetics was far from being a success story. Administration was poor, and there followed a series of squalid quarrels between Hubbard and the men who had originally joined him to promote the new science. When Hubbard lost control of the Hubbard Dianetic Foundation, he moved to Arizona and established Scientology, which took the basic ideas of Dianetics much further, and which transformed a therapeutic system into a metaphysical cosmology that was called the "Science of Certainty".

Wallis convincingly argues that the Dianetics phase of the movement conformed to the typical operation of a cult. There were a large number of independent practitioners, many of whom "mixed" Dianetics with other forms of therapy, and some of whom felt that they could themselves improve its efficiency. In Scientology, Hubbard steadily asserted his own authority through a central organization, exercising severe control over all those who became auditors, rigorously insisting that members abandon all other types of therapeutic practice, and imposing a variety of bizarre penalties on those who failed to conform to the organization's requirements.

The shift from cult to sect thus occurred, and Wallis documents the process with immense thoroughness, and with incidental but important comparative glances at Christian Science and New Thought, the histories of which were in some respects so similar and which, as Wallis shows, can now be conceptualized in this newly-developed framework.

With respect to Scientology itself, the analysis is particularly fruitful, enabling Wallis to make sense of a vast mass of data that are, at first sight, intrinsically widely divergent and apparently arbitrary. I have only one reservation with respect to this analysis, and that arises from the fact that the Scientologists have not, as far as I know, ever demanded of their adherents exclusivity with respect to religious belief, and some are said to have continued in their churches (despite the difficulty, as I see it, of reconciling their scientological cosmology with that of any western religious system). It might be the case that since the Church of Scientology was a relatively late development within the Scientology organization, and remains a somewhat shadowy branch of it, the gesture of tolerance to other religions can be maintained because it is likely to be only a gesture, and to have no practical significance for the movement or for many of its members.

People who go into Scientology do not normally do so in search of God, or even of a metaphysical explanation of the world. They join because they believe that through Scientology they can raise their intelligence and develop their potential. It begins, for most people, with a free intelligence test offered by the Scientology organizations. Courses follow, most of them with an auditor who seeks to discover with the aid of an *E-meter*—a skin galvanometer, not unlike a lie-detector—the issues on which the individual is blocked. The aim of is to clear the patie blocks, to make him free from the deleterio fixed in his mind by pre-natal experiences, ences in previous lives.

The individual is mortal, a *thetan*, using body by which he has dentally imprisoned, logy is the system of and theories through individual *thetan* will these limitations. Behind ing and its *tech*, as say, lies a metaphysical branch offices are recru for patients, *preclears*, of the officials who centres are themselves therapy (or training, their way through cou were, paying for their staffing the organization modest wages.

Hubbard has made claims for the efficiency tem of organization, not tolerated. If enrolment fall, the officials in ch garded as either negli ruptive, and so in need ment or therapy. For "e varying magnitude they obliged to submit to course (at some expense or suffering the indignity ing a grey rag as an indicate disgrace, or they sent to Coventry, or undertake long hours work. With such a relen conception of penalties tologists' sensitivity to becomes perhaps more able.

The recurrent brushes state and its agencies Scientology has been im vide Wallis with the mat particularly intriguing which, using the amplification model, he show how escalation in the antagonism of agencies and the Sci towards each other, Wallis regards as a moral panic, a pattern lative over-reaction. The a nice one—when does moral concern become panic? If it is difficult "when", it is easier to say principally by the activities mass media, the new self guardians of public mor immorals. As for Scientology Wallis shows how its belie is maintained for its through an elaborate sys ternal controls and a of sanctification". In all us a compelling analysis perhaps even the Scien would agree, is a phenomenon.

Bryan

Placating the spirits and healing the sick

Social Anthropology and Medicine
edited by J. B. Loudon
Academic Press, £7.00
ISBN 0 12 456350 3

This is a collection of papers read at the 1972 annual conference of Social Anthropologists. The rather lengthy interval before publication has not been an idle period, all but two having been revised by the authors, in collaboration with the editor. This has had the effect of deliberately emphasizing certain themes, namely concepts of health and illness; the diversity of ideologies concerning illness and healing, within which consistencies of individual and social responses can yet be identified. Five of the contributors are doctors, and three of these are also professional social anthropologists, while the two others have wide experience in sociological research. The editor himself has practised medicine in Africa and in Britain, and retains a keen appreciation of the practical skills and modest satisfactions which are involved in the daily routine of treating common complaints, in any location.

The diversity of ways in which illness is perceived, and responded to, is well brought out in the contributors' excerpts from their field notes. Gilbert Lewis, living among the Gnau of New Guinea, found that they used the word *wola* to denote feeling out of sorts, but it can also mean bad, evil, wretched, harmful, or dangerous. With the prefix *bi* (meaning roughly "become") the word becomes *biwola* which means "old" or "ruined" and is used in reference to longstanding crippling illness. They employ a quite different term, *neygeg*, for serious, life-threatening illness which is a visitation by a local spirit. When one of the Gnau decides that he is *neygeg* he withdraws into a dark place, strips naked, smears himself with dirt, talks in a thin, weak voice and eats very little. He does not ask for help, but his kinsfolk exert themselves on his behalf. The logic of his behaviour is to deceive the spirit into believing that he is already done for, and thereby to evade further afflictions: the word *neygeg* means literally "He will die, will die".

In contrast, the Maguzawa of Nigeria show great fortitude in the presence of pain and are reluctant to give up their normal activities. They will seek relief by the application of heat or cold, or of crushed herbs, or by binding the affected part tightly. Illness is seen as the occurrence of unwelcome symptoms, to be relieved as best they can; but death is God's responsibility, and cannot be influenced by human intervention.

The Akawaio, jungle dwellers in the interior of Guyana, take to their hammocks when they feel sick, but do not withdraw from society: on the contrary they like to describe their symptoms to any interested listener and to consult his or her opinion about treatment—which usually requires the patient, his or her spouse and sometimes the kinsfolk also, to practice dietary restrictions.

From these and other reports, from Africa, Sumatra and Nepal, it becomes apparent that sick peoples' first concern is to "place" their state of disease in a coherent system of beliefs concerning the natural and the supernatural environment. Because illness (together with various misfortunes and interruptions of the settled order of things) is commonly understood as due to a breach in one's relationship with powerful spirits, the task of the healer is to identify the spirit in question, and to show how the relationship can be restored.

Although many of the communities described here are remote and "unspoiled", nearly all have had some contact with what some of the contributors call "cosmopolitan medicine". It too plays a part in their understanding of illness and healing, but a minor part: except in a few instances, where an injection or a medication shows dramatic results, they tend to the view that western doctors simply do not understand the true underlying causes of their afflictions. As Audrey Butt Colson puts it, near the end of this meaty volume: "Ethnomedicine is concerned not only with health, illness and treatment, but with problems of religious belief, of magic, of notions of causation, of danger and power and of the interrelations of all these to each other and to the local social system."

Only one of the papers reports field-work from this country, namely Ruth Salzberger's study of attitudes towards cancer among women in East Anglia. She shows that once confronted with the reality of cancer, her respondents were less prone to ignorance and fear th doctors had suggested; they resisted preventive because the very screening seemed to expose them of being told that affected. No less than in preliterate societies, suffer if our morale is by threats against which relatively powerless.

The 13 papers are parate in their several Dr Loudon has tried, in to emphasize some elements: for example, the emphasis placed in societies upon caring for the rather than on curing the cites Professor A. L. C observation that our " cure at all costs may supply of care". In traditional ties the need of the sick for provides an acid test of the of kinship sentiments. As happens, these observations behaviour in exotic societies quently compel us to see with eyes the failures of social which largely nullify the ments of our own technical culture.

G. M. Cars

Astride the Channel

The Norman Empire
by John Le Patourel
Clarendon Press : Oxford University Press, £15.00
ISBN 0 19 822525 3

HIC WILLELM DUX IVSSIT NAVES EDIFICARE

William I, from the Bayeux Tapestry

John Le Patourel, Emeritus Professor of History in the University of Leeds, where, after a long and distinguished career at University College, London, he taught and directed research for 29 years, is himself a Norman by descent, for he was born in Guernsey, one of the "Iles anglo-normandes" as the French still call them. William the Conqueror would have accepted his name as the equivalent of Shepherd. His earlier books, especially *The Medieval Administration of the Channel Islands, 1199-1399* (1937) and *The Building of Castle Cornet, Guernsey* (1958), together with his many authoritative articles, are well known to all historians and greatly admired.

He defines the theme of his new book as an analysis of "the complex but coherent political structure which the Normans built up in Northern France and Britain during the eleventh and early twelfth centuries". In time he moves from the treaty of Saint-Clair-sur-Epte in 911 to the war of succession between Stephen and Geoffrey Plantagenet, his wife Matilda and Henry FitzEmpress, the future Henry II, in 1145. The states which the Normans created in the Mediterranean are not involved, important parts of the Norman expansion indeed, but too far away to be considered in the present argument. In deference to the vast amount of work already done on the subject by other distinguished historians, he calls his book "an essay in reinterpretation".

The book is divided into two parts. The first, with the title "Chronology", is a succinct and cogently written survey of the ever-widening activities of the Normans. It proceeds from the agreement by which Charles the Simple, King of the Western Franks, gave Upper Normandy to Rollo to the years preceding the seizure of England; and then moves on to the conquest of our own country, first the military operation and then the occupying phase in all its aspects down to 1072. There follows the extension of Norman overlordship and colonization into Wales and Scotland, and the further expansion of authority on the continent, in Brittany, Maine, Anjou, the Vexin and to the north. The story ends with the collapse of this "great complex of lands and lordships" in the 10 years which followed the death of Henry I, until, "by the mid-1140s England and Normandy were ruled by two men, each of whom had sons to succeed him and whose families had been rivals for several generations already. . .".

In part two Professor Le Patourel describes how the Norman Kings organized their government. We follow them in their constant itineraries on both sides of the Channel, we learn the problems set by the food, fodder and accommodation needed for their household, the nature of that household, the treasury and financial administration, the judicial system, and the frequent need to cross the sea, an exercise so well organized that it came to be treated as a matter of routine. In all this there was an essential unity: the maintenance of the theory of non-partition in Normandy and the added territories, Robert Curthose's designs on England after the division of 1087 and those of William Rufus on Normandy, the unifying authority of Henry I, and the oath of fealty to Matilda as heir to both England and Normandy sworn at the Christmas court of 1126-27. Increasing assimilation between the kingdom and the duchy continued to further this sense of unity, in the interests, common to both, of the royal family and the aristocracy, the judicial and financial administration, the seals used indiscriminately for English and Norman affairs, the common household which accompanied the King whether he was in England or Normandy, in ecclesiastical matters and in the rapid Normanization of English monasteries. Just how far this had progressed by 1135 it is difficult to say. Were the lands and lordships of the Norman Kings moving towards an even closer integration, or were there by then already factors present which would put the process into reverse?

In conclusion, Professor Le Patourel examines what he calls "the dynamics and the mechanics of Norman expansion": the great wealth of the Norman Kings; the ambition of the baronial families, the number and power of the Norman monasteries, the all but impregnable castles, the combined strength of castle, monastery and borough. Small wonder that he feels justified in using the term "Norman Empire" to describe the dominion which William the Conqueror and Henry I built up astride the English Channel.

The book has a bibliography of over five hundred entries, a genealogy of the Norman Dukes and Kings, two clear and most detailed maps and a full index.

Lewis Thorpe

Princely, yet pragmatic

The Kingdom of Naples under Alfonso the Magnanimous: The Making of a Modern State
by Alan Ryder
Clarendon Press : Oxford University Press, £12.50
ISBN 0 19 822535 0

Historians of southern Italy have long emphasized the remarkable precocity of its government and institutions; some have looked to the Normans, and above all to their heir Frederick II, praising the Kingdom of Sicily and southern Italy as a "model-state". To whom or of what it is supposed to have been model is rather unclear; but it is evident from Alan Ryder's new book that the rulers of southern Italy had lost neither their pragmatism nor their vision in the fifteenth century.

For Dr Ryder this is the period when "there came into being one of the first, perhaps the *first*, of European states to exhibit many of those characteristics that historians have labelled 'modern'", and he has the courage to list these characteristics: a bureaucracy staffed by professionals, domination of both church and nobles by the crown, an army recruited and paid by the crown itself, and the use of extensive direct taxation to finance the crown.

What was new in this? Ryder does not shy away from the fact that in the twelfth and thirteenth centuries southern Italy had been ruled by strong kings to whom some of these methods were familiar; the most striking differences between Alfonso's successes and those of the Normans or Hohenstaufen lay, perhaps, in two spheres. Under Alfonso, direct taxation was a novelty, if not in its imposition, at least in its scale. Even in the thirteenth century parliaments had been summoned to agree to major levies, levies that themselves became increasingly regular; but, Ryder argues, it was under Alfonso that these taxes became the prime source of royal income. Secondly, Alfonso was magnanimous indeed in his grants of land and confirmations of rights to land—grants that continued to erode the crown's direct control over the economic and financial resources of southern Italy. Alfonso was generous even towards his enemies: his claim to succeed the last Angevin ruler, Joanna II, was disputed by other members of the house of Anjou, and many south Italian barons gave their support to the gifted poet, René of Anjou, against Alfonso of Aragon.

None the less, Alfonso made every effort to win their support when René had finally been chased away from Naples. Alfonso rightly calculated that the gratitude of the nobles would be displayed in the Neapolitan parliaments, and that he could be sure of their contribution to the tax burden (which, in any case, fell very largely on the shoulders of their own vassals). Since, moreover, Alfonso was prepared to raise his own armies the feudal duties of the great princes were not particularly onerous. The prime duty was, indeed, an abstract one: loyalty. Alfonso, for his part, was prepared to employ *condottieri*—the famous Frederico di Montefeltro marched in his ranks.

The coherence of Ryder's picture is all the more praiseworthy for two reasons. In the first place, he has written his book while based far away in Nigeria; in the second place, very many of his sources have only recently been destroyed. In 1943 German soldiers set alight, quite deliberately, the villa where much of the Naples State Archive had been stored for safety during the war; they thus destroyed the almost incomparable series of registers of charters of the kings of Naples. Almost but not absolutely incomparable: the fact that Alfonso ruled in Aragon as well as Naples led to the accidental preservation in Barcelona of chancery registers that should, correctly, have been kept in Naples; and Ryder has extracted a wealth of detail about Alfonso's government from hundreds of volumes of the king's charters.

That more remains to be done is obvious not simply from the great extent of surviving material in Barcelona, but also from the limits that Alan Ryder has placed on his study. Its title is perhaps over-generous: the book is an examination of the government of the kingdom, and thus a view of the kingdom seen from the royal castle at Naples. Even his chapter on provincial government is ultimately concerned with relations between the central offices of state and the south Italian provinces. There is little on cultural activities, economic developments or foreign policy. Thus the crown's use of bankers is discussed, but not their function in the south Italian economy. Little is said about the other part of Alfonso's Italian realms, Sicily; but much more is said, of necessity, about Aragon, which supplied so many of Alfonso's professional civil servants. But within his narrower theme, Ryder has provided a rounded and absorbing account of the original and successful approach to government adopted by one of the great rulers of the fifteenth century.

David Abulafia

Seeds of change

The Economy of England 1450-1750
by D. C. Coleman
Oxford University Press, £3.75 and £1.75
ISBN 0 19 215355 2 and 289070 0

In spite of the habitual dullness of the genre, it seems there will always be a demand for textbooks. Students have a limited time to devote to reading, or, being human, will opt for anything that looks like a short cut. Certain fields, because of the homogeneity of the subject-matter, or because they correspond to courses widely offered, constitute obvious targets for aspiring textbook writers: the economic history of early modern England is one of these.

Located tidily between the longueurs of the Middle Ages and the clamour of the Industrial Revolution, the early modern period nicely combines overall stability with sectoral change: though it germinated the seeds of the coming economic transformation, it remained reassuringly agrarian, a landscape still peopled by the stock figures of Old England—yeomen and squires, apprentices and weavers.

Within a compass that will instantly commend itself to students, Professor Coleman skilfully contrives to convey this duality. Unlike the Marxist historians who are perennially attracted moth-like to the study of societies whose very cultural and economic assumptions they abhor, Coleman obviously loves his period. Even when he sees Tudor or Stuart society riven by conflict, or when he finds himself obliged to turn to the sterner forms of economic analysis, affection, sympathy and understanding are never far away.

If each generation rewrites history in its own image, Coleman accurately reflects current thinking in basing the structure of his analysis firmly on the dynamics of demographic change. Drawing on the as yet unpublished aggregative work of his colleagues in the Cambridge Group for the History of Population and Social Structure, he has chosen to break his 300-year period in the mid-seventeenth century, a turning-point which divides a long, if occasionally interrupted, sub-period of population growth from a shorter one of virtual stagnation.

In the first sub-period the slow recovery of population growth after the plagues of the later Middle Ages carried an expanding and diversifying economy through the long inflation of the sixteenth and early seventeenth centuries. In the second, the levelling-off of population growth and prices provoked a new metabolism. Coleman's "new context" for the growth in the century after 1650 of almost everything but population is unfettered by the conceptual rigidities of "stages of growth". In his view, the major elements of his "new context" were greater religious, political and social stability, and the rise of scientific rationalism.

Coleman's new textbook satisfies because it combines rigour of analysis with a fundamental humanity, while the knife-edge balance between the originality which any fresh approach demands and the orthodoxy inherent in the presentation of a solid foundation of basic information is admirably achieved. He writes vividly and often entertainingly: detail is blended artfully with generalization, and rival interpretations are critically surveyed with a cheerful tolerance too often lacking in earlier historical writing about this period. He has provided an original and valuable addition to the exiguous stock of really good textbooks of English economic history which will be widely and gratefully read by students and their teachers for a long time to come.

M. W. Flinn

"A landmark in social thinking to rank with the work of Crosland and Galbraith." —Alan Day, *Observer*

Social Limits to Growth
FRED HIRSCH £5.50

"Important books are rare. They are all the more welcome when they appear; and one need have no hesitation in ranking as an instant classic Fred Hirsch's new analysis of the inherent defects of the market economy as an instrument of human amelioration. —Peter Jay, *The Times*

"Why has the vision faded? Why has economic advance yielded such disappointing results, yet still remains a compelling goal for individuals? Why are people so concerned about redistributing the pie when there are much greater prizes from enlarging it? Why is greater permissiveness in personal matters being combined with collective provision and state regulation in the economic sphere? A book which not only confronts these questions head-on but goes a large part of the way towards answering them is an outstanding event. Professor Hirsch's book does exactly that." —Samuel Brittan, *Financial Times*

Now in Paperback
The Victorian City
Images and Realities
Edited by H. J. DYOS and MICHAEL WOLFF
Volume I: Past and Present and Numbers of People

Originally published in two volumes *The Victorian City* has been acknowledged as the seminal work for the understanding of the urban past and present. Unique in its many-sided approach to the total phenomenon of the city, the work encompasses not only what took place, but what people thought about it and themselves as it happened. Michael Ratcliffe reviewing the two-volume edition in *The Times* commented: "It is a magnificent and thrilling exploration; part archaeology, part alchemy, part detective fact and part something very like extrasensory perception, for just beneath its 970 pages, 38 articles, 434 stunningly presented photographs and elegant typeface shimmers a sense of teeming life that will radically shift their view of the nineteenth century for anyone who reads it." *Illustrated* £4.95

Routledge & Kegan Paul
39 Store Street, London WC1

Human factors

Town Planning and Pollution Control
by Christopher Wood
Manchester University Press, £7.95
ISBN 0 7190 0635 X

Planning for Public Transport
by Peter R. White
Hutchinson Educational, £5.95 and £3.25
ISBN 0 09 126850 8 and 126851 6

Airport Systems Planning: A Critical Look at the Methods and Experience
by Richard de Neufville
Macmillan, £10.00
ISBN 0 333 17622 7

All three books deal with major planning issues, but although they all reflect the state of the planning process and cast light on its deficiencies, they are very different in aim. One is purely educational, two relate directly to practical issues.

Town Planning and Pollution Control is the third book in a series dealing with pollution in which the author sets himself the very specific task of relating policies to problems. With no preamble his opening chapter poses four questions: what is the role of planning in pollution control? What powers already exist to make the role effective? Are the existing powers sufficient to meet the challenge? Are the techniques available to implement the planning response?

The bulk of the text is an examination of all aspects of planning which have a bearing on these questions, ranging through a comprehensive reminder of types of pollution and discussing organizational response. This part is strengthened by case-studies which examine the problems on a regional and urban level as well as at structure-plan stage; and the whole is admirably referenced.

A final chapter answers the initial questions in the light of the evidence, and pinpoints the areas where there is lack of knowledge or deficient appreciation of techniques or where existing powers are not sufficiently exploited. It ends with a series of recommendations to meet the deficiencies. The analysis is a useful critical review of the existing situation, but the author does not go beyond the existing technical or organizational framework.

Planning for Public Transport is the latest in the Hutchinson series of texts on the built environment, many of which are proving admirable basic texts for college teaching. The book is unashamedly aimed at the student, though it will be useful for professional workers and is written in a straightforward manner which will be readily understood by the layman who wants an introduction to this field.

The opening chapter plunges uncompromisingly into the relevant Acts of Parliament and into the organization of the major operators of public transport. The author then deals with the role of public transport, an analysis of bus and coach and rapid transit systems, pricing and costing, and the special problems of rural transport. The book is well handled and organized, dealing with all the relevant technical and organization details: and students will undoubtedly make great use of it.

It is nevertheless disconcerting to find so much emphasis on the technical side, on costs, on distance and on time. The words "social service" are conspicuously absent from the index, and one cannot help feeling that people have been largely forgotten. The word "public" is in the title but is it no more than a device to indicate that we are not dealing with private transport? There is no indication that "public" means men and women and children, different age groups, different needs. Only on the last two pages are issues raised which might have enlightened the whole argument, and even here such problems as relative accessibility as a social issue is not mentioned.

Fortunately this is something which looms much larger in *Airport Systems Planning*. The author begins by pointing out that the emphasis on technical and economic considerations in isolation has led to problems which necessitate radically new thinking. We have entered a period when less effort needs to be devoted to detailed design and more attention needs to be placed on planning the integration of these facilities with the social system. The limits of a technological approach are seen not only in the failure of airport design, but in our inability to find satisfactory political solutions to problems of airport siting, as in the third London airport. There is a desperate need for understanding individual preferences, social values and the cultural contexts in which airport planning is conceived.

Just as an international style is no longer valid, so the assumption that there can be an international approach to planning is demolished in view of the different planning philosophies of major air powers. The belief in economic criteria and faith in trends does not stand up to the facts. International consensus is no longer relevant. The whole problem must be seen from the public viewpoint. What kind of solution is the community entitled to expect, and within what constraints?

The author deals with the difficulty of forecasting growth and the rigidity of the outcomes. He calls for a review of methods of forecasting, for a widening of the band of possibilities, using cheaper models, having contingency plans for adaptation. New strategies must allow for uncertainty and some degree of open-endedness in which decision analysis could play a part. The author also makes a strong plea for planning any airport within a total system. There is a healthy questioning of the assumptions which have led to rapid transit systems feeding airports from city centres, and again the user is given priority over the mechanics of the system. Similarly the author claims that human factors are too often overlooked in planning automation, for example, in baggage handling. Time and again difficulties arise where technical efficiency meshes with human behaviour, and primacy must be given to the latter. The arguments are cumulative and convincing. Technological advance will not serve the community in the best way until it accommodates the varied cultural demands and uncertainties of human behaviour.

Emrys Jones

Town and environment

Environmental Factors in Urban Planning
by E. Grandjean and A. Gilgen
Taylor & Francis, £9.75
ISBN 0 85066 084 X

This text, based on a substantial amount of recent and ongoing research rather than the accumulated wisdom of the postwar period, makes a valuable contribution to the growing volume of material on urban planning.

The book has four themes—air pollution, noise, urban open space and sunlight and natural lighting indoors—although well over half the space is given to the first two, reflecting the amount of research done on them.

The section dealing with urban open space introduces some interesting themes but the treatment is shallow and much recent valuable investigation is ignored. Important trends in the provision of urban open space in Britain and Europe are not mentioned leaving the impression that there is little of substance in this field and that little progress has been made.

The technical data in the section on sunlight and natural lighting indoors will undoubtedly be useful to environmental health officers, building inspectors and architects, but no attempt has been made to relate this section to the rest of the text, a criticism which is true of the book throughout.

The text is not easy to read as it is punctuated constantly by tables and diagrams, and while it is laudable that the authors should introduce research findings, specialist research papers might have been more appropriate for some of the very detailed information. Whereas this text will help to develop a greater understanding of environmental issues, readers are advised to use it for reference only.

Timothy Shaw

Regional planning in the EEC

The Regional Problem in Western Europe
by Hugh Clout
Cambridge University Press, £3.30 and £1.60
ISBN 0 521 20909 9 and 09997 8

Western Europe as a whole is represented in this book by a single most useful map of assisted areas from Sicily to North Cape, but it is really about the European Community countries. After briefly identifying "problem areas" in terms of population change, income and employment, the regional policies of the Six and of the enlarged Community are described as a prelude to a description of regional problems and development policies in the Community countries. The book will certainly provide most useful reference material for the sixth-former and his teacher, and quite a valuable introduction to studies at higher levels.

The most annoying type of reviewer is one who describes the book he would ideally have seen written, rather than what is in fact before him. Yet some gaps, obviously quite deliberate ones, do in fact raise important questions. It is true that geographers "are particularly interested in spatial aspects of regional differentiation", but are they then excused from presenting an explanation in terms of "the economic mechanisms that produce such regional differences"? Ought not even the intelligent sixth former be made aware that men like Perroux, Myrdal, Isard, Pred or Holland have said some rather important things about the origins of regional disparities and ways of reducing them? They ought perhaps even to know that some geographers, let al mists, who believe tha differences in income inherent to capitalism, c be removed by the type o economy, liberal-capitalis in which Community co their trust. Admittedly questions that are as m the nature of geography Hugh Clout's book, but scarcely irrelevant or un To make things worse, th of the regional planning described in this book ha depended on the availa demographic and economi In the new situation of li growth, regional plann western Europe is d trouble.

T. H

Martin Waldseemuller's woodcut version of the Great Khan of the Tartars appears on his Carta Mar 1516—a map drawn largely from Portuguese charts. But for the cartography of China and Mongolia the Great Khan sits), sea charts were useless as most of the information was drawn from versions of Book of Marco Polo written in 1298. From Landmarks of Mapmaking by R. V. Tooley and Charles B Phaidon, £27.50.

The positivist tradition

Space Location and Regional Development
edited by M. Chatterji
Pion, £5.50
ISBN 0 85086 054 7

Theory and Practice in Regional Science
edited by I. Masser
Pion, £4.25
ISBN 0 85086 051 2

Urban Fields: A Geometry of Movement for Regional Science
by S. Angel and G. M. Hyman
Pion, £5.00
ISBN 0 85086 052 0

Urban Modelling: Algorithms, Calibrations, Predictions
by Michael Batty
Cambridge University Press, £17.50
ISBN 0 521 20811 4

Regional science and theoretical geography have immediate origins going back at least twenty years but their intellectual antecedents lie deeper in the traditions of western science with its search for order, pattern and explanatory power. Regional science has grown out of the introduction of a spatial dimension into economics and the "quantitative revolution" in geography has grown from the application of mathematical and statistical methods to what had hitherto been a largely descriptive concern for the uniqueness of places.

While both are scientific revolutions in the sense of an intellectual drive for better theory, both have also been stimulated very considerably by their professed relevance for public policy—notably in problems of regional development and urban planning. To some extent, the usefulness of regional science and urban modelling to policy problems has proved disappointing, partly through "overselling", partly because of practical difficulties and not least because of a recent but growing disenchantment with the application of scientific method to situations in which questions of value predominate.

This may be leading to a polarization of these fields between those workers who continue to push for more elegant theoretical formulations in a positivist tradition and those who are concerned to explore and reveal the ideological basis of the working assumptions. With one or two exceptions, most of the material in these recent works are in the 20-year-old tradition of positivist development.

Professors Masser and Chatterji have edited collections of papers originally presented at conferences whose main object was to present recent work in the field of regional science. The Chatterji volume is the result of a symposium held in 1974 at New York State University and contains a kaleidoscopic variety of papers. Although the editorial introduction makes some reference to regional problems in developing countries this theme is not strongly reflected in the 15 papers which deal with such disparate topics as postwar metropolitan growth in the United States, "world environmental management", environmental pollution, criminal behaviour *and* police expenditure (though in a separate paper). There is considerable variation not only in topics but also in generality. For example, Chatterji himself contributes a paper on "some suggested approaches to spatial regularities" while Newton writes about pooling cars and buses to improve urban transport.

The volume edited by Professor Masser is much more clearly structured. The contributors are mainly British and the volume is essentially a report of the 1974 conference of the British section of the Regional Science Association. The 10 papers are arranged in three sections—on theory, mathematical application and regional policy. Professor Isard, the "founding father" of regional science, contributes an introductory paper suggesting directions for future work and there are papers which are relevant for North Sea oil development and regional policy for manufacturing in northern England. John Carney and his colleagues also use the North-East to suggest that many of the problems studied by regional scientists are a necessary "late capitalist" economic ment.

Angel and Hyman are inte in transport planning proble note that traditional geom gradually yielded to m methods suitable for the co But to some extent a baby thrown out with the bathw the authors' main aim is how differential geometry ca tegrate many findings con the spatial structure of citi the spatial interaction within They explore this by means on Greater Manchester and minimum travel-time curves they show are analogous geodesics or great circle routes. Such a field the movement geometry leads to discussions of a continuous of spatial interaction and interesting critique of reces economic theory. The second of this short text is reprints vant papers by other authors a computer program for travel-times model.

The earliest "models" liter was often remiss in being about practical details such sources, computer programs the process of building the itself. Mike Batty has draw almost 10 years' experience model building in practice and search and a similar period undergraduate and graduate ing. The result is a remark good and comprehensive cluding an introduction to the and practical accounts of building for different parts of urban planning process. As all the work reviewed here, certain amount of numeracy is quired to follow the argument Batty's presentation is excellent his illustrator and publisher ha served him well. The quality is doubt reflected in the very price; such an important book quickly be made available in cheaper edition for the teach and students who will find it valuable.

Brian McLough

A poet on impulse

The Art of Emily Bronte
edited by Anne Smith
Vision Press, £5.25
ISBN 0 85478 483 7

Currer and Ellis and Acton Bell, "the Brontës", have been a perennial subject of literary and biographical interest since the publication in 1847 of *Jane Eyre*, *Wuthering Heights* and *Agnes Grey*. Even in 1977 it is still too easy to think of them as Cerberus, with Charlotte, Emily and Anne as the three heads. *The Art of Emily Brontë* has at least the virtue of emphasizing that it is wise to remember that they are individuals, that coincidences of kinship, heredity and environment do not make it essential to treat the three sisters together, and may even make it a disservice to do so.

Few major reputations rest on so little: just one novel, and a small, fragmentary, wholly lyric output of poems, which are difficult to relate to each other, to the novel, and to what little we know from elsewhere of their writer. The one agreed immediate impression is the power and passion of both poems and novel. Interpretation is a different matter. This collection of essays, although divided into two parts which deal with the poetry separately from the novel, finds, as usual, that it is difficult to avoid constant comparison and cross-reference, and the impulse to use the poetry to illuminate the novel, or the novel to explain obscurities in the poems.

Robin Grove is probably right in stating firmly that high claims should not be made for her poetry, if by that he means he would not put her in the first rank. Barbara Hardy is even more cogent in the general point that "the act of writing verse is sufficiently distinct from that of writing prose to deter most novelists from being poets as well", and citing Swift and Scott as the only exceptions before Emily Brontë.

The odd facts—among many—are that Emily Brontë seems to have written poetry by impulse and compulsion years before she wrote her only novel, and, while the novel is hard to fault, the poems have all sorts of unevennesses, wherein, to quote Barbara Hardy again "most readers have their own anthology of lyrical fragments filched from bad verse". Few can disagree with her conclusion that her poetry has lapses, that its phrases are weak, often conventional, and yet that she can at her best muster more intensity than greater masters of language.

The essays on the poems are the most original and the most useful, yet this book will be bought—or more likely borrowed from libraries—for the sake of what it offers on the novel. This is a mixed bag, with at one extreme Colin Wilson's random comments, which he has the honesty to call "A Personal Response"—a title which is its own *caveat*. At the better end are more useful and searching studies, like Keith Sagar's "The Originality of *Wuthering Heights*" which finds D. H. Lawrence, somewhat surprisingly, to be the inheritor of the spiritual territory explored by her.

It is a pity that the general editor of the collection did not confine herself to her proper job, to write an introduction, leaving the contributors to do the contributing. She uses her space to write her own "new assessment" of the novel, through yet another analysis of the two main narrators Ellen Dean and Lockwood, which makes some very odd statements indeed, such as that Ellen is "the most fully-drawn complete human being in the novel—or possibly in any novel, for that matter".

The collection may perform a service, but for the student or general reader who wishes for a compact selection of different approaches to *Wuthering Heights*, this one cannot vie with Ian Gregor's collection of *Twentieth-Century Views*. At the least, though, it may provoke ideas of his own in the reader, and could take as its epigraph Ellen Dean's own wry remark: "You'll judge, as well as I can, all these things: at least, you'll think you will, and that's the same" (chapter XVII).

W. A. Craik

Shakespeare the imitator

The Origins of Shakespeare
by Emrys Jones
Clarendon Press: Oxford University Press, £10.00
ISBN. 0 19 812080 X

It is now thirty years since T. W. Baldwin first forced on critics an awareness of a commonplace cultural and educational tradition behind Shakespeare's plays (*Shakspere's Small Latine and Lesse Greke*, 1944). Over the course of those thirty years we have gradually come to terms with "Shakespeare the product of his age": Shakespeare reader of Ovid, reader of Virgil, of Seneca, of Erasmus, of Ravisius Textor. We understand that the Elizabethan habit was to cobble together a work out of secondhand fragments, and we busily unpick them again and line up the pieces for scrutiny. Emrys Jones's book is yet another contribution to the refining of the contours of this picture.

The Origins of Shakespeare raises in urgent form the question: What are to be our criteria of *evidence* of influence in this now well-charted territory? Emrys Jones finds that: "All the extant Greek tragedies (of Euripides) were made available in editions and in Latin translations during the sixteenth century, so there is no question but that they would have been accessible to anyone with not much more than a moderate reading ability in Latin". This is certainly an important piece of information to bring to our reading of the tragedies and to help us to understand how Shakespeare's contemporaries read them. But what Jones goes on to note is that "*Titus Andronicus* consists of two movements of feeling, the first dominated by passionate suffering, the second by purposeful revenge", and that the *Hecuba* of Euripides also falls into two such parts. "What emerges for a reader of Shakespeare is the close resemblance of its form [the *Hecuba*] to that of *Titus*, both having an action divisible into two parts, the first dominated by grief, the second by revenge, in both the transition from first to second part being similarly rapid and decisive". By the next chapter we have, "the basic form of *Titus Andronicus* was derived, either directly or mediately, from the *Hecuba*, of Euripides", and by the end of *that* chapter we have Shakespeare "imitating Euripides" and "inaugurating a style (in the *Julius Caesar* quarrel scene between Brutus and Cassius) that was not fully exploited until the seventeenth century".

The *Hecuba* (in Latin translation) was an Elizabethan best-seller. This explains the frequent direct allusions to Hecuba as a figure for grief in Shakespeare (*Titus Andronicus* I.i and IV.i, as Emrys Jones indicates). But did Shakespeare really need Euripides to suggest to him the "two movements of feeling" in *Titus*?

Ascham said that the ideal for Renaissance *imitation* was "similar treatment of dissimilar material" and "dissimilar treatment of similar material". If you were a good imitator, in other words, you covered your tracks. If we are going to make profitable use of material such as Emrys Jones brings to our attention we are going to have to decide on our own code of practice for uncovering them.

Lisa Jardine

Masters of melodrama

The Melodramatic Imagination: Balzac, Henry James, Melodrama and the Mode of Excess
by Peter Brooks
Yale University Press, £9.90
ISBN 0 300 02001 5

Although nineteenth-century melodrama has begun to be regarded as worthy of critical study, it is still normally seen as a popular genre separate from—and inferior to—more sophisticated forms of dramatic or fictional writing. Professor Brooks sets out to treat the melodramatic mode seriously, to rescue it from its pejorative connotations, and to give it a more central place in artistic creation.

Chapter one contains the best pages I know on melodrama's essential nature. Not only is the concept shown to be vital to any real understanding of Romantic art, but the author goes further, and claims that "the melodramatic mode can be seen as an intensified, primary, and exemplary version of what the most ambitious art, since the beginnings of Romanticism, has been about", namely, "uncovering, demonstrating, and making operative the essential moral universe in a post-sacred era".

The death of tragedy in the positivistic world of the nineteenth century was paralleled, suggests Brooks, by the rise of melodrama, which was to become "an enduring mode of the modern imagination". Romantic drama may appear, in France, at any rate, to be the form in which the melodramatic most obviously sought more ambitious literary expression; but the Romantics themselves recognized, Brooks claims, that the theatre, with its material contingencies of time and space, was bound to be too restricting a medium for "a drama of the moral occult, the clash of grandiose forces". It is to the novel, therefore, that he looks for the nineteenth century's most creative handling of the melodramatic mode.

To deal with the melodramatic in Balzac in under fifty pages is a tall order: the reader inevitably comes to the end of the chapter with queries left unanswered, expectations unfulfilled. The general thesis is unexceptionable: melodrama, writes Brooks, is "part of the semiotic precondition of the novel for Balzac"; the Balzacian novel is "a novel from which we most retain a series of summary attitudes and gestures in high relief, a breathless insistence on the dramatic semantic potential of all our actions". Every Balzac reader will be able to fill in that outline, providing examples from his own experience of the novels.

Paradoxically, it is Brooks's own analysis of a selected example, *Le Père Goriot*, that raises certain doubts. On page 135, for instance, he uses the terms "Manichaeistic", and "Manichaean", which have already figured prominently in his characterization of theatrical melodrama, in such a way as to suggest a similar coloration for Balzac's moral universe. But Balzac's ethical system surely cannot be interpreted in the simplistic Manichaean terms that are appropriate to Pixerécourt. His characters are polarized, not into conventionally good and evil, but into strong and weak, active and passive; and as with Corneille's heroes, the "admiration" prompted by Balzac's supermen is often independent of moral approval: after all, these include Vautrin and Gobseck, as well as Benassis or Louis Lambert. Indeed, when Professor Brooks writes that Vautrin is "certainly the villain, but at the same time almost the wise and understanding *généreux* of melodrama", he himself blurs those moral absolutes to which he elsewhere makes Balzac subscribe.

The identity of the other chosen exemplar will surprise some readers: Henry James, whose psychological subtlety and fastidiousness of style may suggest quite a different kind of imagination. However, following James's progress from "melodrama of external action" to "melodrama of consciousness", Brooks shows convincingly how the latter remains the stage — and not only in the obvious case of *The Turn of the Screw* — for truly melodramatic conflicts. Convincingly, or *nearly* convincingly — for one is left wondering whether melodrama *so interiorized still deserves the name* melodrama — just *as one* does with what Brooks calls "melodrama domesticated", the "well-made play" which James so much admired.

But in spite of the transformation that the melodramatic mode has undergone at James's hands — and although with James the author seems deliberately to have chosen an extreme test-case, rather than the more straightforward examples of Dickens or Dostoevsky, whom he cites in passing — there is a most satisfying unity to the book. We are unlikely to accept passively everything the author says, but like all the best *comparatistes*, he opens up stimulating new [illegible] of inquiry, and invites re-reading.

W. D. Howarth

3 New Journals from Edward Arnold

Progress in Physical Geography
Editors: Bruce Atkinson, R. J. Chorley, D. R. Stoddart, Christopher Board, Peter Haggett, David Lowenthal
A critical international perspective on developments in the subject and related fields. Physical geography is interpreted as encompassing all aspects of and approaches to the physical environment, including man-environment interactions.
Each issue will contain 5 or 6 major articles, 5 or 6 short annual reports and a substantial review section. The centre section builds during the year to a 16-part annual survey of all major subdivisions of the subject.

Progress in Human Geography
Editors: Christopher Board, Peter Haggett, David Lowenthal, Bruce Atkinson, R. J. Chorley, D. R. Stoddart
A critical international perspective on developments in human geography. Like *Progress in Physical Geography* it is designed to be of maximum usefulness to university students, teachers, and researchers on the subject.
Each issue will contain 5 or 6 major articles, 5 or 6 short annual reports and a substantial review section. The centre section builds up during the year to an 18-part annual survey of all major subdivisions of the subject.

International Journal of Urban and Regional Research
Editor: Michael Harloe
Editorial Board: Manuel Castells, Frances Fox Piven, S. M. Miller, Enzo Mingione, R. E. Pahl, C. G. Pickvance, Edmond Preteceille
This journal is international and interdisciplinary. It will publish critical and comparative papers on urban and regional developments throughout the world. A major focus will be the examination of emerging alternative structures. It will be written by and for sociologists, political scientists, social geographers, regional scientists and others involved in the investigation of social organization and social change.

Edward Arnold
Journals Division, 25 Hill Street,
London W1X 8LL

The three journals will each have three issues a year
576 pages approx per volume (three issues)
UK Annual subscription (three issues) £12.50
(including postage)

Reference & pamphlets

Science dictionary

A Dictionary of Physical Sciences by John Daintith published by Macmillan at £5.95 covers the main branches of physics, chemistry and astronomy; it also includes a selection of terms from related fields such as electronics, computer science and mathematics.

Banking

The Banks and Industry, published by the Institute of Bankers at £2.00, contains four papers read at the seminar held at Christ's College, Cambridge, in September 1976 on the problems of company finance and industrial investment, and the texts of the discussion syllabuses and case studies used at the seminar.

Ireland

Northern Ireland in the Second World War: A Guide to Official Documents in PRONI has been compiled by P. J. C. Radcliffe at the Public Record Office in Northern Ireland to indicate areas where examination of official records on Northern Ireland during the Second World War, now available to the public, might usefully be concentrated. It costs 35p.

Russian leaders

Russia, west of the Urals, a chronology of the heads of state with commentaries by Richard Hodges is published by Academic and Business Monographs, 6 Brodrick Road, London SW17 at £5.60.

Scottish galleries

The *National Galleries of Scotland Annual Report for 1975* published by HMSO at £1.00 reports on the activities of the galleries throughout 1975, their purchases, including the Verocchio *Madonna and Child*, and the difficulties which they continue to face.

BFI money

Production Board edited by Alan Lovell, the latest British Film Institute publication, includes a chapter on funding bodies and funding procedure in relation to independent film-making, interviews with current members of the production board selection committee and the results of a questionnaire to film-makers about their dealings with the board when making their films. Available from the BFI, 81 Dean Street, London W1, it costs 70p.

Critical edition

The Autumn 1976 edition of *Agenda* is a special issue on criticism with contributions from Michael Alexander, Bernard Bergonzi, C. H. Sisson and others. A selection of poems by Osip Mandelstam and articles on the poetry of Thomas Hardy and Philip Larkin are also included and copies can be obtained at 75p from Agenda Editions, 5 Cranbourne Court, Albert Bridge Road, London SW11 4BB.

Giving advice

Advice to a Young Poet by Max Jacob, translated from the French by John Adlard, is published by the Menard Press at 75p to coincide with the centenary of Jacob's birth in 1876. The book is completed by a preface by Edmond Jabès and an afterword by the "young poet", Jacques Evrard.

Librarianship

Prospects for British Librarianship, edited by K. C. Harrison is a Library Association Centenary volume in which the contributors attempt to predict the future developments and problems in their respective professional fields. It costs £6.50 (£5.20 to members) and is available from the Publications Department, The Library Association, 7 Ridgmount Street, London WC1E 7AE.

Founders of quantum physics

Early History of Planck's Radiation Law
by Hans Kangro
Taylor & Francis, £25.00
ISBN 0 85066 0637

Niels Bohr, collected works, volume 3: The Correspondence Principle (1918-1923)
edited by L. Rosenfeld and J. R. Nielson
Elsevier, $105.95
ISBN 0 7204 1803 8

Authors of textbooks on quantum physics usually make formal obeisance to the founders of their subject in a brief introductory chapter or section of a chapter: the abbreviation and over-simplification which this entails is by now fairly standardized. The volumes under review are a striking reminder of how pallid and how far from the truth—historical or scientific—the accepted myths have become.

Professor Kangro traces in painstaking detail the experimental and theoretical studies of heat radiation in the second half of the nineteenth century. He emphasizes how significant, in the discourse between theorists and experimenters, is the theorists' estimate of the validity of the experimenters' results.

It was the experimental work of Langley, Rubens, Paschen, Nichols, and a series of workers in the *Physikalisch-Technische Reichsanstalt*, which ultimately provided reliable information about the radiation from bodies of known temperature. And 1900 was the year when the key workers in the field decided that the discrepancies between this information and the many previously proposed radiation laws were significant. Further theoretical effort was needed. When Max Planck produced his new radiation formula, building on his own efforts of many years, the fit between it and the observational data was satisfactory. The realization that a new intellectual epoch had dawned with the new century did not come till later.

Practically all of Planck's notes and manuscripts were destroyed in Berlin during the Second World War, and Kangro's study of Planck's published work and the vast collateral literature—the bibliography contains about 550 entries—is therefore welcome. Any reasonably well-informed physicist will find the book stimulating and illuminating, but the translation will give the less knowledgeable reader some baffling moments.

A few years after Planck launched quantum theory into the twentieth century, Niels Bohr became one of the leaders of the attempt to explain the quantization of atoms and molecules, and the interaction between matter and radiation. The Bohr-archive is being published in eight volumes, of which the third has now appeared.

This volume is concerned with Bohr's attempts during 1918-23 to find a satisfactory general foundation for quantum theory: it is not history, but the raw material of history, a quarry for historians and philosophers of science. An excellent 45-page commentary by Professor Nielsen introduces 22 papers, lectures, drafts, and unused page-proofs, and almost 100 pages of selected correspondence.

Repeatedly, the commentary and the correspondence remind us of Bohr's inability to stifle his creative urge for long enough to get his work written up—letters of apology for manuscripts still overdue, letters explaining that his ideas have developed so much that the first paper in a promised series was out of date before he could start the second, and so on. Every working scientist knows the problem; few have suffered from it so acutely, because few have been so creative, or have tackled such great and complex problems. So much of Bohr's work now belongs to history; it is only from these sources that we can realize the power, the scope, and the influence of his ideas.

R. M. Sillitto

Topolog

Fundamentals of Topolog
by Benjamin T. Sims
Collier Macmillan, £8.50
ISBN 0 02 410640 2

The author's aim is to undergraduates with a uni ment of the fundamental of both point-set and topology which will give view of the fundamental ology, encourage further this area, and enable th quickly to reach the fr mathematical research.

Like so many books of the work has been conce basic core of essential ma study to which has been number of optional topic by starred sections. This ment has much to comm vided that the distinction essential and optional t been made appropriately.

A preliminary chapter a number of basic mathem cepts to be used in the r of the work. Logic, sets, functions, orderings, lattic the Axiom of Choice and axioms, groups, homomor isomorphism are all "bri troduced and discussed i pages. This material & more than provide a mi revision for those alre acquainted with the topic The section on logic, in p is a superficial and, bec quate review of the pro calculus; at the same t largely superfluous since the material is not usu quently even where op arises to do so.

The first chapter i topological spaces and lead cussions of uniform, p function and quotient spa last two being in a starred Here the presentation is c standard though somewh densed. The second i separation axioms, specific of Alexandroff and Hopf, l by a chapter on covering ties, beginning with com and leading to optional sec developable spaces, para ness and the compactific Alexandroff and Stone. Al logically presented, these ters suffer, perhaps more t other part of the book, fr indigestible sequence of and definition with only th mum of discussion.

Chapters on connectivity, zation, and convergence and pleteness follow while the fi chapters diverge from the p approach and look at top spaces in terms of algebraic associated with them. This c ing material provides a cle precise introduction to h and singular homology theo

Extensive use is made of ex and exercises throughout the indeed, these are integral t development of the material cannot be followed adequatel out them. Unfortunately the s sion of many of the example best very sketchy and no s or discussion of the exercises vided, so there is thus no w which the independent learn assess his own progress in standing. As with so many te needs of the independent learn either forgotten or impr understood. There is an ext index and a useful bibliograph books and papers, though as and only two papers, post-19 listed.

Overall, *Fundamentals of* *logy* provides an adequate surv the more important definition theorems of topology, presented logical order. The treatment ca some claim to be "unified" there is certainly much to encou "further study". However author's intention to provid "overview" fails because it is cisely the discursive materi viding such an overview is missing from the many readers will find ficult to become suffic detached from the detail quickly the "frontiers of resea can subsequently be reached depend upon factors over which author can exert no control subject area where these fron are moving so rapidly.

Graham Fl

The liquid state

Modern Theory of Critical Phenomena
by Shang-Keng Ma
W. A. Benjamin, $14.50

Our real understanding of the critical region of liquids began with van der Waals's work in 1873 and our understanding of critical phenomena in magnets began with the work of Curie and Weiss. Unfortunately these "mean-field" theories give quite wrong values of the "critical exponents" that describe the results of measurements of, for example, the pressure as a function of volume in the immediate neighbourhood of the critical point.

Attempts to understand what is going wrong have followed two main lines. One can look for exact results. This is at present possible only for very simple models and involves difficult mathematics or very extensive computation or both. The alternative is "scaling" or "renormalization group" theory which came into existence in about 1965 following an international conference on critical phenomena in Washington which emphasized the basic resemblances of many different systems.

As its name implies, scaling theory compares systems near the critical region when such quantities as numbers of molecules in the system, crystal lattice spacings, etc, are changed. At present, this can only be done approximately and one cannot always set proper limits on the errors introduced by the approximations. The proof of the pudding is in the eating, and it cannot be denied that such theories have made very impressive predictions about critical exponents in spite of drastic assumptions and (sometimes) cavalier methods.

This book is a brave attempt to describe the essentials of renormalization group theory for the benefit of possible research workers in the field. The present state of the art "with all its warts and wrinkles" is described. The author does not hesitate to pinpoint errors, apparent inconsistencies and other difficulties but skilfully avoids anything resembling polemics or personalities. Much of the material has hitherto only been accessible in original papers and conference reports, and the author's "running commentary" on a rapidly developing field should be very valuable both to prospective workers and to scientists and engineers, concerned, as so many of them are, with various aspects of the liquid state and its phase changes.

Ideally, a scientific account should start with the facts, should expound the theory and then discuss objections. The last two things are done extremely well but the account of the experimental facts is sketchy and superficial. Experimental details would have been out of place, but one would like to have seen how the scatter of experimental points changes as one approaches nearer to the critical temperature, just how near it is practicable to go in a given case, and some discussion of such experimental matters as the sensitivity of a nearly critical system to gravity and to impurities. The latter would have been especially welcome, since nearly a whole chapter is devoted to theoretical discussion of the effect of impurities. Another curious omission is that the author seems to regard the fact that, for example, liquids and magnetic materials have similar critical exponents as a sort of gift from heaven. Actually, there are models of magnetic materials that can be rigorously transcribed into quite acceptable models of a liquid or solution.

Renormalization group theory is applicable to dynamical as well as to equilibrium properties. Exact results for dynamical models are very scarce, but some information is available from computer simulation. Four very interesting chapters are devoted to dynamical problems. The printing, paper and indexing are all excellent.

H. N. V. Temperley

A classic

Electricity and Magnetism, 3rd edition
by B. I. Bleaney and B. Bleaney
Oxford University Press, £17.50 and £9.95
ISBN 0 19 851140X and 851111 8

For many years, teachers of electricity and magnetism have been able to present their own personal selection of what is interesting and important in the subject, knowing that they can fill the gaps by referring the student to Bleaney and Bleaney for the full story. Now with the publication of a third edition, we can do this with renewed confidence that the full story is not only authoritative but also up to date.

Comparing the new edition with its predecessors, one is impressed by the amount of new material, and led to question why so much effort is called for in revising a classic of this nature. The answer lies in the fact that the authors do not belong to the school that believes it is best to teach electromagnetic theory, circuit theory and solid-state physics separately. They believe that their subject has a special quality arising from the mingling of these three aspects, and that textbooks should have a unifying influence in bringing them together. Clearly there are points in favour of writing separate texts, and one of them is that they need less rewriting than a unified text. The reason for writing a text covering all aspects of the subject is that it can contain all useful connecting links; the penalty for doing so is that when part of the subject develops one must rewrite not only that section but also the connecting links, and adjust other sections accordingly.

Here the pattern of necessary rewriting has been set by two factors: first, fundamental developments in solid-state physics have begun to provide a new basis for understanding electric and magnetic phenomena. Second, solid-state devices have, following fundamental and technical developments, become increasingly important in electrical and electronic apparatus. In response to these points, the authors have inserted new chapters on dielectrics, free electrons in metals, the band theory of metals and superconductivity, and have greatly enlarged the sections on solid-state devices.

These changes have modified the balance of the book as a whole, so that it now contains a higher proportion of solid state physics. Thus even those readers who use the book simply to look up points in the theory of circuits or electromagnetic fields will gradually acquire a new background which more accurately reflects the present balance of fundamental thinking in physics.

W. M. Gibson

Reviewers

Among this week's reviewers:

David Abulafia is fellow of Gonville and Caius College, Cambridge;

G. M. Carstairs is Vice-Chancellor of the University of York;

T. H. Elkins, author of The Urban Explosion, is professor of geography at the University of Sussex;

M. W. Flinn is professor of social history at the University of Edinburgh;

W. D. Howarth is professor of classical French literature at the University of Bristol;

R. M. Sillitto, senior lecturer in physics at the University of Edinburgh, is author of Introduction to Non-relativistic Quantum Mechanics;

H. N. V. Temperley is professor of applied maths at the University College of Swansea;

Lewis Thorpe, professor of French language and literature at the University of Nottingham is author of The Life of Charlemagne and The Bayeux Tapestry and the Norman Invasion;

Bryan Wilson is reader in sociology at the University of Oxford and fellow of All Souls; he is author of Magic and the Millenium and The Noble Savages.

How social groups happen

ssential Psychology: Unit B
1 Social Behaviour
y Kevin Wheldall
2 Interpersonal and Group ehaviour
y Judy Gahagan
3 Values, Attitudes and Behaviour hange
y Ben Reich and Christine Adcock
4 The Social Psychology of Organ- ations
y Frederick Glen
5 Psychology and Social Structure
y Barrie Stacey
ll Methuen, 80p

w social psychologists could cavil five separate volumes and just er 700 pages, within a series on ssential psychology", devoted to coverage of their sub-discipline. wo of the five volumes (B2 and 3) between them, however, cover e conventionally recognized areas social psychology—of attitudes, cial interaction and the dynamics small groups. Despite the greater versity of topics covered and their eater density of material (ie, ore lines per page than B4 or B5) th volumes are well written nd each has a coherent and nifying theme.

Three further volumes could have ovided ample scope to the series' itor for innovation. Glen's volume the social psychology of organiza- ons is well conceived and usefully ls a niche in the existing litera- re. It is a psychological intro- uction, written in expository style, a body of social science literature at is likely to be seriously under- presented in the typical first egree syllabus in psychology. How- er, social scientists who turn to is series in the hope of identifying eful social psychological contribu- ons to an understanding of their wn discipline are likely to be riously disappointed. The signi- cant and highly important sym- olic interactionist tradition of cial psychology which has devel- ped within sociology is not parately represented in the series, ough it receives honourable men- on *en passant* in Gahagan's olume.

The behaviourist contribution (Wheldall's volume) is written from such a purely psychological viewpoint that the author appears to be entirely oblivious of the social behaviourism of G. H. Mead. Ironically it is part of Wheldall's self-description that "... his special interests are language and communication, and social behaviourism". Yet there is not a single reference to symbolic interactionism in the entire volume. The pity is that Wheldall's viewpoint, *within psychology*, is in no sense narrowly behavioural (for example, the central importance he attaches both to language and to communication) and he comes as close as any purely psychological behaviourist ever could to actually adopting and advocating the symbolic interactionist perspective. This volume (B1) is simultaneously a painful reminder of just how independent and autonomous the psychological and sociological traditions of social psychology are and evidence of how little the present series improves on this state of affairs.

Where a sociological perspective is represented in the series (Stacey's volume on social structure) it is the work of macro-sociologists and theorists, especially Marx, which prevails. To give such prominence to the theories of social determinists is a further disservice to the symbolic interactionist tradition of social psychology. Stacey's volume is little more than a highly selective commentary, predominantly from a Marxist viewpoint, on various aspects of Western capitalist societies. A professional sociological exposition of various theories of social class with serious and critical attention given to social psychological approaches to the study of social class would have been infinitely preferable, in my opinion, to a lay exposition of sociological theory which seriously underplays the strength of the social psychological perspective.

The volumes by Gahagan and by Reich and Adcock are much more critical and evaluative of the work they survey than the other volumes in the series. Gahagan's volume is particularly well written and ranges all the way, in terms of face-to-face interaction, from the study of dyads to the study of crowds. The excellence of her exposition is occasionally marred by a minor inaccuracy (for example, she relates the bowling scores of the Norton Street gang to street cricket rather than to ten pin bowling) or a rare instance of muddled presentation (her exposition of Moscovici and Fauchaux's work on "minority influence" is both confused and confusing). Reich and Adcock treat "values" as of central importance and hence give deserved prominence to Rokeach. Their emphasis on resistance to persuasion and their treatment of self-conceptions is both novel and stimulating. Their coverage of consistency models of attitude change is, however, meagre and this failing is not corrected elsewhere in the series.

Phenomenological and cognitive orientations in social psychology are seriously undersampled and behavioural orientations are given undue prominence. The term "behaviour" appears in three of the five titles in the series. A possible antidote to the behavioural bias is provided, outside of the series in Mary Tuck's excellent volume on consumer psychology, *How Do We Choose?* (F6). Her sympathetic, yet critical, evaluation of Fishbein's expectancy-value approach to the study of attitudes is a useful and necessary complement to the Reich and Adcock volume in the present series. The behaviourist bias is even evident in the errors. A classic article on "attitudes" by the highly cognitive and "humanistic" G. W. Allport is wrongly attributed in the reference section to his behaviourist brother F. H. Allport (Wheldall, page 137). Even behavioural social psychologists do not always receive the attention that their work might deserve—the important work of Daryl Bem does not feature in Wheldall's volume (a single reference on page 99 to Benn scarcely suffices).

In general, however, the publishers are to be congratulated on making available serious texts in psychology at low cost.

Robert M. Farr

Memory for mnemonics

Attention and Memory
by Geoffrey Underwood
Pergamon, £7.75
ISBN 0 08 018751 4

Dr Underwood's book, which is aimed at students of experimental psychology, is the latest of a number of books which have recently been published on memory; in addition the book deals with the related field of attention. As far as content is concerned Underwood does provide a reasonable account of work in most of the areas he covers, dealing as he does with sensory memory, categorical memory, control processes and attention.

The chapter on sensory memory discusses Sperling's work on immediate forgetting of brief visual displays, as well as the characteristics of the precategorical acoustic store. The second chapter deals with memory for material once it has been categorized by the memorizer. Here one of the main debates is whether memory should be divided into two—a short-term memory of labile nature and a long-term memory of relatively permanent duration. Underwood's view is that a distinction between the two is not justified, and while I agree with this conclusion, it must be admitted that Underwood's arguments concerning this relatively unpopular view are far from exhaustive, and the arguments themselves are not always clearly presented.

The book's main defect is its style in which clause follows clause with little attempt at punctuation. One of the many examples which could be cited is on page 126:

> Words are described as being processed from one storage code to another with little consideration of the selective processing of words, except in relation to the primary effect and with little consideration of the interactions between items, except in relation to the effects of similarity upon forgetting.

Underwood's third chapter on control processes deals with those activities which the individual himself controls, and which affect the nature and extent of memorization. Of critical importance are the processes of rehearsal and mnemonic organization. The significance that the role the individual's activity plays in memorization has been a much neglected topic until recently.

The emphasis given by Atkinson and Shiffrin to this, and by Peter Herriot in his recent book is taken up by Underwood. Yet his coverage, while adequate, does reveal just how limited is our knowledge and understanding in this area. If there is to be any contribution from the psychology of memory to the welfare of the man in the street in helping him with his problems in memorization, it will have to come out of an understanding of those processes over which the individual himself has control. There is little in Underwood's book to raise hopes that psychology is about to deliver the goods.

The final section deals with attention, the control process which determines whether we will process and remember material in the first place. This section shows the intimate relationship between attention and memory, and deals with many of the major aspects, such as the dichotic listening experiments and Broadbent's theories of attention.

M. M. Gruneberg

Issues in occupational psychology

ssential Psychology: Unit E
Psychology and Work
D. R. Davies and V. J. Shackleton
Selection and Assessment at ork
Gilbert and Helen Jessup
The Psychology of Training
Robert Stammers and John trick
Men and Machines
Hywel Murrell
Motivation at Work
Hywel Murrell
Methuen, 80p, E3 75p

ychology and Work is the intro- ction to Unit E—on occupational ychology — in this ambitious ies. The coverage is remarkably e, although one could take issue h the authors' way of organizing r material—the topic of motiva- bobs up in surprising places. emphasis is on those topics minent in contemporary arch and practice; thus under ork Design" there is extended erage of current approaches to ing the intrinsic interest back work, as well as the more tra- nal ergonomics. With chapters he older worker and stress they nly draw attention to areas re psychologists have a continu- role.

fter that encouraging start I nd the Jessups's book, which is nly an account of psychological ting, disappointing. Any descrip- of the selection *process* has to until chapter nine. Seven pters cover the assessment of individual, one-and-a-half pages re devoted to analysing the require- ents of jobs. Yet psychologists' ntribution to the systematic deter- ination of what a job requires of s new tenant can be as valuable the tests themselves. Moreover ere is hardly any discussion of e process of *choosing* a test. The ook was written in a hurry: text nd tables fail to match, some dates re misleading, others incorrect, and section on interests gets a lot facts wrong. Good points are a useful chapter on counselling and short ones on manpower planning and future trends. This book is out of step with the others in the unit—it is chattier in style and seems altogether more lightweight.

Stammers and Patrick's book is the highlight of the unit. To teach psychology students about training one must find an appropriate level between the arcane and the mundane. The middle ground is hard to find. This book does it most successfully. The authors present clearly an information-processing model of human skill as a theoretical context for their treatment of training methods, generously illustrated with real-life industrial examples interwoven with research results. By using a systems approach they give the reader "tie-rods" to link training into other related areas of occupational psychology, for example, selection and ergonomics.

For the book on ergonomics Professor Murrell gives us an unusual selection of topics treated in depth, often using a terminology beyond the target readership. The treatment of the relative advantages of man and machine covers familiar ground but there is no reference to the tide of opinion that "Fitt's lists" were misconceived; nor are there sufficient examples to give a new reader any feeling of security.

Surprisingly the topic of dial design is treated in great detail, and the complex argument is aimed at the qualified reader. It is a difficult topic to bring alive and Murrell does not succeed. I was irritated by an over-emphasis on his own research work, especially in the chapter on machine pacing; which really takes us into a backwater considering that this little book is meant to cover a quarter of the whole field of occupational psychology. I would have preferred a wider coverage and less in-depth treatment.

If Murrell was an obvious choice for the previous book, I was surprised to see his name on E5—*Motivation at Work*. It only fell into place when I realized that he was taking as his theme "attempts to make people work". He thus explicitly accepts a manager's understanding of the term "motivation". But this is a series on psychology not on management precepts. To psychologists the term "motivation" denotes the "why" of behaviour, and in a work context I had expected a coverage of psychologists' attempts to understand why people work, and work hard or not, and of their success in explaining and predicting that behaviour. Successful applications on the shop-floor would be one kind of evidence. In Davies and Shackleton's introductory volume this gets a fuller treatment than it does in this book, ostensibly all about motivation. So I find this book misconceived.

Using an historical structure the various approaches are divided into those invented by managers and those due to academics. But in the "post-1939" category of the latter there is no mention of the important developments in psychological thinking about work motivation which started in the 1960s. Vroom's book is mentioned but there is no hint of its importance in laying the groundwork for an expectancy theory. Prominent names omitted include Porter, Lawler and Campbell. This may be intentional as Murrell barely conceals his contempt for "contemporary innovators" and for academic industrial psychologists. Moreover, by adopting management's terminology he seems also to have lost that power to cut through loose thinking about behaviour that should characterize the psychologist.

The material in this book is interesting and much of it will be unfamiliar to psychology students. With a more open mind, a more systematic structure and a more rigorous selection of material, Murrell could have given us a book that integrated theory and practice, old and new. Instead an opportunity has been lost.

David Nelson

Individuals in action

Personality
edited by Rom Harré
Blackwell, £7.50
ISBN 0 631 17360 9

At one level this book is a vigorous attempt by social psychology/sociology to take over the concept of "personality" from individual psychology. As such it is welcome. We are born from inside someone and we spend the rest of our lives enmeshed in relating to a variety of someones, so we lose little by saying goodbye to the myth of the "individual" as created by traditional psychologists. Since the contributors to this book are considered heavyweights in their field it affords us a chance to see how effectively the overall approach promotes what the introduction calls "our understanding of individual human beings as social actors".

Bowlby contributes the logical converse of his maternal deprivation argument. He claims that a "self reliant personality" develops from a secure personal base in childhood. The literature is nicely explored but the essay leads inevitably to a platitude. "Through interaction with trustworthy and encouraging others, a person learns how to combine trust in others with trust in himself." (The women's movement has not forced Bowlby to retreat from the convention that a person is male.)

There are valuable observations about child-mother interaction in Shotter's essay which effectively breaks with the traditional child rearing study which assumes that the child is reared and nothing much happens to the parent. However, the essay as a whole gets bogged down in a version of the chicken-egg argument. Shotter ravages Chomsky's contention that "the general form of a system of knowledge is fixed in advance as the disposition of the mind". He proposes instead that we should see the newborn infant as *innately possessing* natural powers but *developing* personal powers in negotiated interaction with those who already possess them. Since no babe can exist except in some kind of "negotiated interaction" it is hard to see the point of this two stage proposition. Given that a child can discriminate between some things and some other things, what we can explore is the active elaboration of the child's discriminations. Thus, the foetus, if it is going to *get itself born needs to discriminate between more and less oxygen and more and less food.*

Alston provides a thoughtful critique of trait theories in the field of personality argument and judiciously opts for the alternative of what he calls purposive-cognitive concepts. The heart of the essay is in the right place in that it would lead us to shun the static and irresponsible aspects of trait concepts. To say that Joe strikes you because he is "bad-tempered" is both to ignore the question of the processes going on in Joe (he just is genetically, originally, permanently "bad-tempered") and also to leave you without the responsibility for what went on *between* you and Joe because after all the bad temper is *in him*. The weakness of the essay is that it talks continually about concepts and not about theories. Alston has that kind of delicate academic style in which concepts you like are "derived from" and concepts you dislike are "spawned by".

In presenting an interactional model of person and situation Argyle founders on the question of who is to define the situation. This is the old social-psychological tangle whereby we are half prepared to admit that the *situation is what the person sees it as being but, for experimental* and analytic purposes, we assume the right to define the situation as we see it.

Finally Waele and Harré provide the core essay of the book, "The Personality of Individuals". The essay is radical in that it turns its back completely on traditional personality questionnaire and game playing laboratory situations as ways of understanding the personality of the individual. They advocate a range of sources of data which involve the exploration of autobiography, the direct observation of the person in action in social settings, social inquiry *with* the person and the use of deliberately contrived problem and conflict situations. What the essay and the book do not do is to confront the question of what kinds of pyschological theories can transcend the old dichotomy between social and individual psychology.

As an example of social psychologists taking over the field of personality this book presents a view of them flexing their muscles rather than lifting any weight.

Donald Bannister

[illegible]

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DEPARTMENT OF AIR CONDITIONING AND REFRIGERATION
(IRAN)

Jundi Shapur University, Ahwaz
To establish, organise and manage a new department, and train lecturers. PhD and relevant Engineering qualifications with at least 5 years' experience.

Salary: £11,500-£19,700 pa (approx).

Benefits: Housing allowance. One-year contract renewable. 77 HU 14

SENIOR LECTURER

IN MEDICAL ENGINEERING
(IRAN)

Jundi Shapur University, Ahwaz
To establish a new department, supervise technical staff and lecture. PhD or MSc and at least 2 years' teaching experience.

Salary: £10,750-£14,200 pa (approx).

Benefits: Housing allowance. One-year contract renewable. 77 HU 15

Return fares are paid. Local contract is guaranteed by the British Council.

Please write, briefly stating qualifications and length of appropriate experience, quoting relevant reference number and title of post for further details and an application form to The British Council (Appointments), 65 Davies Street, London W1Y 2AA.

THE BRITISH COUNCIL

UNIVERSITY COLLEGE CORK/UNIVERSITY COLLEGE DUBLIN

RESEARCH ASSISTANT/DEMONSTRATOR
DEPARTMENTS OF ENGLISH

Applications are invited for two appointments as Research Assistant/Demonstrator to conduct field work for The Tape-Recorded Survey of Hiberno-English Speech (one appointment will be made in University College, Cork and the other in University College Dublin).

Candidates should have an Honours Degree in English, Irish, Linguistics, or a related subject. The chosen candidates will undergo a brief course of instruction at the Queen's University, Belfast, where they will be trained in the methods of the Survey. The appointment will be for one year (1977/78) in the first instance. Salary will not be less than £1,100 per annum.

Applications for either of the appointments, together with the names of two referees, should be sent to:

Professor Alan Bliss,
Department of English,
University College,
Belfield, Dublin 4.

The closing date for receipt of applications is 31st March, 1977.

ULSTER: THE NEW UNIVERSITY

SCHOOL OF HUMANITIES

SENIOR LECTURER IN LINGUISTICS

Ref. 77/37

Applications are invited for the post of senior lecturer in charge of linguistics which is available from October 1, 1977. Applicants should possess a higher degree in the subject and have experience of administration as well as of teaching and research.
Salary scale (with FSSU/USS): £6,443 to £7,951 per annum.

SCHOOL OF HUMANITIES

TEMPORARY LECTURESHIP IN ENGLISH LANGUAGE

Ref. 77/8/38

Applications are invited for the above post which is tenable for the period up to January 31, 1979. The post is available immediately, but a later commencing date may be arranged if more convenient.
Applicants should have specialist qualifications in English Language and a good knowledge of general linguistics. They should also be able to take some part in the teaching of Chaucer and the 14th century.
Salary scale (with FSSU/USS): £3,333 to £6,665 per annum.
The appointment will normally be made within the first three points of the scale.
Further particulars for both posts may be obtained from The Registrar, The New University of Ulster, Coleraine, Northern Ireland BT52 1SA (quoting appropriate reference number) to whom applications, including the names and addresses of three referees, should be returned not later than April 8, 1977.

UNIVERSITY OF NAIROBI —KENYA

Applications are invited for the post of

LECTURER in DEPARTMENT OF GEOLOGY

Applicants must hold a PhD, have teaching, research and field experience and specialise in Mineralogy and Igneous and Metamorphic Petrology. Salary Scale: K£1,800-K£3,098 p.a. (K£=£1.40 sterling). The British Government is unlikely to provide supplementation for these posts. FSSU: family passages; various allowances. Detailed applications (2 copies) including a curriculum vitae and naming 3 referees should be sent by airmail not later than 6th April, 1977, to the Registrar (Recruitment and Training), University of Nairobi, PO Box 30197, Nairobi, Kenya. Applicants resident in UK should also send 1 copy to Inter-University Council, 90/91 Tottenham Court Road, London W1P 0DT. Further particulars may be obtained from either address.

AUSTRALIA
UNIVERSITY OF MELBOURNE

TEMPORARY SENIOR LECTURER

in the
DEPARTMENT OF ECONOMICS

The Department of Economics wishes to appoint a Temporary Senior Lecturer for one term of the 1977 academic year. Term dates are (1) March 7 to May 14; (2) July 5 to August 13 and (3) September 5 to October 22. Applications are desired from those in any field of economics (broadly defined) who have an established teaching and research record.
Salary: $A18,795 to $20,010 per annum. The appointment includes provision for one economy return air fare.
Enquiries may be directed to the Chairman of the Department of Economics, Dr. J. P. Nieuwenhuysen.
Applications quoting position number S1BTSL should be addressed as soon as possible to The Registrar, University of Melbourne, Parkville, Victoria, 3052, Australia.

RICHMOND COLLEGE LONDON

The Governors invite applications for the following posts in the rapidly developing independent university college, which is licensed to award the A.A. degree by the Board of Higher Education in Washington, D.C., and has a multi-national student body of 300.

HEAD OF FACULTY OF ENGLISH AND HUMANITIES SALARY SCALE £5,500-£6,000

This is a key post offering scope for the development of courses in the Humanities. Duties include teaching 12 hours of English Literature courses per week, counselling students and supervising a large visiting staff. Candidates should have a Ph.D. and/or good first degree and have experience of degree level teaching and course planning.

HEAD OF FACULTY OF BUSINESS, MATHEMATICS AND SCIENCE SALARY SCALE [illegible]

Business Studies, Mathematics and Science form an expanding part of the work of the College. This post requires the teaching of 12 hours of Business Studies courses per week plus counselling students and supervision of both full-time and visiting faculty. Candidates must have a good degree in business studies and have experience of degree level teaching preferably using the case method, and course planning.

TUTOR IN MATHEMATICS SALARY SCALE [illegible]

The tutor in Mathematics teaches 15 hours per week, mainly at the G.C.E. 'A' level standard including calculus. Candidates must have a good degree and teaching qualifications, together with relevant teaching experience.

TUTOR IN ENGLISH SALARY SCALE [illegible]

The tutor in English teaches 18 hours per week of remedial English language courses, mainly written English to foreign students. Candidates must have a good degree and teaching qualifications together with relevant teaching experience.
Candidates should apply by March 20 in writing enclosing the names of two referees to the Principal, Richmond College, Queen's Road, Richmond, Surrey TW10 6JP.

The British Council

invites applications for the following post:

PROFESSOR OF ENGLISH
at the University of Qatar, Doha

Salary

£17,270

a year tax free

Benefits: Free furnished accommodation; car allowance; free medical service; terminal gratuity, return first class air fares; annual passage paid leave. 3 year renewable contract guaranteed by the British Council.

Duties: To teach English Language and/or Literature up to FCE level and to fulfil Head of Department duties.

Qualifications: Men only. PhD in English. Experience as a Professor, Reader or Senior Lecturer in a British, Canadian or American University is essential.

Please write, briefly stating qualifications and length of appropriate experience, quoting reference number 77 AU 11 and title of post for further details and an application form to The British Council (Appointments), 65 Davies Street, London W1Y 2AA.

MOUNT ALLISON UNIVERSITY
SACKVILLE, N.B., CANADA

Applications are invited for an appointment in the COMMERCE DEPARTMENT to teach undergraduate courses in Accounting and Systems/Management Science. Rank open. Candidates must have a relevant higher degree with substantial teaching experience and preferably professional accounting qualifications as well.

Salary commensurate with qualifications and experience.

For further details please contact:
Professor David Higham,
58 Broadgate Lane, Horsforth,
Leeds LS18 4AG
Telephone: 0532 587795

NATIONAL UNIVERSITY OF LESOTHO

Applications are [illegible] post of

SENIOR LECTURER [illegible] LECTURER IN ACCOUNTING

Candidates must have [illegible] degree in Accounting [illegible] a related field [illegible] equivalent professional [illegible] Preference will be [illegible] those with experience [illegible] teaching and/or [illegible] and a knowledge of the [illegible] of the accounting profession [illegible] Lesotho and Southern [illegible] Teaching experience [illegible] knowledge of [illegible] of the following is [illegible] Financial Accounting [illegible] and Taxation, Management [illegible] Management [illegible] Accounting. [illegible] will be on contract [illegible] period of two to three [illegible] The appointee will [illegible] to assume duties [illegible] 1977. Salary: [illegible] [illegible] [illegible] [illegible] Detailed applications [illegible] copies) including [illegible] vitae naming [illegible] with addresses [illegible] 1977, to the [illegible] Assistant (Appointments) [illegible] Roma, Lesotho. Applicants [illegible] in the UK should [illegible] copy to the Secretary [illegible] University Council, 90-91 [illegible] Court Road, London [illegible] 0DT. Further particulars [illegible] obtained from either [illegible]

ABERDEEN

THE UNIVERSITY

CHAIR OF ENGINEERING

[illegible]

BANGOR

UNIVERSITY COLLEGE OF NORTH WALES

DEPARTMENT OF [illegible] STUDIES

[illegible]

Universities continued

SPAIN
UNIVERSITY OF DEUFTO, BILBAO

Lecturer in Linguistics and Language

To lecture in Phonetics and Generative Phonology and teach English in the English Department.

Lectureship for one year, starting in October, with possibility of renewal.

Salary: approx. £5,000 net in pesetas (present rate of exchange).

Apply immediately, with telephone number, to **Ivar Watson, Head of Department, Departamento De Inglés, Universidad De Deufto, Bilbao, Spain.
(Bilbao 4453150.)**

UNIVERSITY OF NAIROBI KENYA

Applications are invited for the posts of

(a) PROFESSOR and (b) ASSOCIATE PROFESSOR IN DEPARTMENT OF LITERATURE.

Applicants should hold a higher degree, preferably a doctorate or equivalent with teaching experience. Appointees will be expected to guide teaching and research at both under and post-graduate levels in the following: African literature; Oral literature; Caribbean and Afro-American literature; Latin American and/or Literature from the 3rd world; European and American literature. SALARY SCALES: (a) K£4,320-K£5,100 p.a. (b) K£3,600-K£4,128 p.a. (K£1=£1.40 sterling). The British Government is unlikely to provide salary supplementation for these posts. FSSU: family passages; various allowances. Detailed applications (3 copies) including a curriculum vitae and naming 3 referees should be sent by air mail not later than 6th April, 1977, to the Registrar, (Recruitment and Training), University of Nairobi, PO Box 30197, Nairobi, Kenya. Applicants resident in UK should also send 1 copy to Inter-University Council, 90/91 Tottenham Court Road, London W1P 0DT. Further particulars may be obtained from either address.

THE UNIVERSITY OF NAIROBI—KENYA

Applications are invited for the post of

SENIOR LECTURER IN THE DEPARTMENT OF ZOOLOGY

Applicants should be Zoologists with teaching and research experience in comparative physiology, physiology of parasites, cellular biology, marine biology, immunology of parasites or vertebrate zoology. The appointee will be expected to develop under and post-graduate courses and research in his/her field of specialization. SALARY SCALE: Senior Lecturer K£2,772-K£3,600 p.a. (K£1=£1.40 sterling). The British Government may supplement salary by £3,720 p.a. (sterling) for married appointee or £2,676 p.a. (sterling) for single appointee (normally reviewed annually and usually free of all tax) and provide children's education allowance and holiday visit passages. FSSU: family passages; various allowances. Detailed applications (2 copies) including a curriculum vitae and naming 3 referees should be sent by air mail not later than 6th April, 1977, to the Registrar (Recruitment and Training), University of Nairobi, PO Box 30197, Nairobi, Kenya. Applicants resident in UK should also send 1 copy to Inter-University Council, 90/91 Tottenham Court Road, London W1P 0DT. Further particulars may be obtained from either address.

ULSTER:
THE NEW UNIVERSITY
SCHOOL OF HUMANITIES

TEMPORARY LECTURESHIP IN RUSSIAN

Applications are invited for the post of Temporary Lecturer in Modern Languages (Russian) with special interest in modern literature from Pushkin to the present day.

The post is available from October 1, 1977, for a period of two/three years.

Salary scale (with FSSU/USS), £3,333 to £6,665.

The appointment will be made within the first three points of the scale.

Further particulars may be obtained from the Registrar, The New University of Ulster, Coleraine, Northern Ireland (quoting Ref. 77/39), to whom applications, together with the names and addresses of three referees, should be sent not later than April 29, 1977.

ULSTER:
THE NEW UNIVERSITY

CHAIR OF SOCIOLOGY

The Chair is tenable from October 1, 1977, will be in Social Anthropology and Sociology within the School of Social Sciences. The person appointed will also be Head of Subject. Candidates should be qualified in sociology or related disciplines.

Salary will be within the professorial range (minimum £8,106 p.a.) with F.S.S.U./U.S.S.

Further particulars may be obtained from the Registrar, The New University of Ulster, Coleraine, Northern Ireland, to whom application, with curriculum vitae and the names and addresses of three referees, should be sent not later than April 22, 1977 (quoting Ref. 77/42).

BIRMINGHAM
THE UNIVERSITY
FACULTY OF COMMERCE AND SOCIAL SCIENCE
LECTURESHIP IN MONETARY ECONOMICS

Applications are invited for a LECTURESHIP in MONETARY ECONOMICS in the Department of Economics specialising in Monetary Economics from 1st October, 1977.
Salary on scale £3,333 to £6,665 per annum plus superannuation.
Applications (three copies) naming three referees by 28th March, 1977, to Assistant Registrar (Commerce), University of Birmingham, P.O. Box 363, Birmingham, B15 2TT, from whom further particulars and application forms should be obtained.
Please quote reference C/174/RB.

BIRMINGHAM
THE UNIVERSITY
FACULTY OF COMMERCE AND SOCIAL SCIENCE
TEMPORARY LECTURER IN SOCIOLOGY

Applications are invited for the post of Temporary Lecturer in Sociology with a special interest in the Sociology of Development and/or Industrial Sociology from October 1, 1977, for two years.

Salary on scale £3,333 to £6,655 per annum plus superannuation.

Applications (three copies) naming three referees by April 1, 1977, to Assistant Registrar (C), University of Birmingham, P.O. Box 363, Birmingham, B15 2TT, from whom further particulars and application forms should be obtained. Please quote reference C/173/.

UNIVERSITY OF NEWCASTLE UPON TYNE
JUNIOR RESEARCH ASSOCIATE

Applications are invited from graduates in humanities or librarianship for appointment as a Junior Research Associate for a research project biography and bibliography. Work will include preparation of data for computer filing but no previous experience with computers is necessary. Ability in languages would be an advantage. The salary range is between £2,904-£4,190 per annum and the appointment, which will be for one year, will be made as soon as possible, from a date to be arranged. The appointee may apply to register for a higher degree. Applicants interested in a part-time appointment may also be considered.

Further details are available from Mr P. J. Wallis, Reader in Historical Bibliography of Education, School of Education, University of Newcastle upon Tyne, Newcastle upon Tyne NE1 7RU, to whom applications should be sent by March 29, 1977.

BIRMINGHAM
UNIVERSITY OF ASTON
FACULTY OF SOCIAL SCIENCES AND HUMANITIES

Applications are invited for two new Chairs in this Faculty:
CHAIR IN POLITICAL ECONOMY (Ref. 182/156)
Applications are invited for a new Chair in Political Economy in the Faculty of Social Sciences and Humanities. Candidates should have training in and preferably combining, Political Science and Economics.
CHAIR IN SOCIAL HISTORY/SOCIOLOGY (Ref. 183/156) in the DEPARTMENT of SOCIAL and HISTORICAL STUDIES
Applications are invited for a new Chair in Social History/Sociology. Candidates should have training in social, economic or industrial history or sociology or a combination of these, and have interests appropriate to the special concerns of a technological University. The successful applicant will also become the Head of the new Department of Social and Historical Studies.
Candidates for both posts are invited to contact the Dean of the Faculty (Professor D. E. Agar) informally before submitting applications if they so wish (Telephone: 021-359 3611 Ext. 6143).
The Salary will be within the professorial range of salaries—minimum £8,106 per annum.
Application forms and further particulars may be obtained from the Staff Officer (quoting the appropriate reference) University of Aston in Birmingham, Gosta Green, Birmingham B4 7ET to whom applications should be forwarded not later than April 8, 1977.

BIRMINGHAM
THE UNIVERSITY
HEALTH SERVICES MANAGEMENT CENTRE

Applications are invited from Health Economists with interests in Planning and Resource Allocation for a LECTURESHIP at this Centre. Social Policy Analysts with some expertise in Health Economics would be considered. The person appointed will be expected to contribute to the Centre's developing teaching, research and consultancy activities.
The appointment, within the salary scale £3,333 to £6,665 per annum (plus superannuation), will be for three years in the first instance.
Further information and application forms available from the Assistant Registrar (Senate Division), University of Birmingham, P.O. Box 363, Birmingham B15 2TT. The closing date for applications is March 29, 1977.

BIRMINGHAM
THE UNIVERSITY
FACULTY OF EDUCATION
DEPARTMENT OF CURRICULUM AND METHOD

POST of LECTURER in EDUCATION (BIOLOGY)
Applications are invited for the above post, tenable from October 1, 1977. The person appointed will be concerned with the Postgraduate Certificate in Education and Advanced Courses. Salary on scale £3,333 to £6,665 plus superannuation.
Further particulars from Assistant Registrar (Education), University of Birmingham, P.O. Box 363, Birmingham B15 2TT, to whom applications (10 copies—overseas applicants, 1 copy) should be sent by April 18, 1977.

BELFAST
THE QUEEN'S UNIVERSITY
LECTURESHIPS IN LAW

Applications are invited for three lectureships in law, tenable from October 1, 1977, or such other dates as may be arranged. An interest in public law will be an advantage for one of the posts.
Initial placing, which will depend on age, experience and qualifications, will be made at one of the first three points on the scale for lecturers: £3,333, £3,547, £3,761 rising to £6,665 with contributory pension rights under the F.S.S.U./U.S.S. The appointments will be subject to periods of probation of up to three years in duration. Assistance with removal expenses is available.
Further particulars may be obtained from the Personnel Officer, The Queen's University of Belfast, BT7 1NN, Northern Ireland. Closing date: March 28, 1977. (Please quote ref: 77/THES.)

BRADFORD
THE UNIVERSITY
RESEARCH FELLOW
ORGANIZATIONAL ANALYSIS RESEARCH UNIT
MANAGEMENT CENTRE

Applications are invited for the Research Fellowship on [illegible] supported by S.S.R.C. [illegible] decision making and power involving [illegible] empirical work in both public and private sectors, with Dr. Richard Butler and Professor David Hickson (enquiries telephone 0274 [illegible]). Two years initially [illegible] doctorate or similar qualifications and or research experience—initial salary in range £3,333 to £[illegible].

Further particulars and application form from Registrar, Reference [illegible], The University of Bradford, West Yorkshire BD7 1DP, to be returned as soon as possible.

BRISTOL
THE UNIVERSITY

Applications are invited for a post as LECTURER in ACCOUNTING within the Department of Economics, which is tenable from 1st August, 1977.

The salary scale for Lecturers is £3,333 to £6,665 per annum, the initial salary to be determined by age, experience and qualifications. Candidates should hold a degree.

Further particulars may be obtained from the Secretary, University of Bristol, Senate House, Bristol BS8 1TH, to whom applications should be sent by 28th March, 1977 (please quote reference [illegible]).

BRISTOL
THE UNIVERSITY
TEMPORARY LECTURESHIP IN SOCIAL ADMINISTRATION

Applications are invited for a temporary lectureship in the DEPARTMENT OF SOCIAL ADMINISTRATION and SOCIAL WORK. It will be available for the academic year 1977-78 only. The salary scale is from £3,333 to £6,665 per annum.
Further particulars may be obtained from the Secretary, University of Bristol, Senate House, Bristol BS8 1TH, to whom applications should be sent by 1st April, 1977 (please quote reference [illegible]).

DURHAM
THE UNIVERSITY
LECTURER IN GEOGRAPHY

Applications are invited for the post of Lecturer in Physical Geography from October 1, 1977.
Salary will be on the scale £3,333 to £6,665 per annum plus superannuation.
Further particulars from the Registrar and Secretary, Old Shire Hall, Durham DH1 3HP, to whom applications (three copies), naming three referees, should be sent by March 28, 1977.

EDINBURGH
UNIVERSITY OF ST. ANDREWS
ELIZABETH SOUTAR SCHOLARSHIP

Applications are invited for the above postgraduate scholarship, tenable in the Department of Chemistry in the University of St. Andrews. The scholarship will commence on October 1, 1977, and will be tenable (subject to satisfactory progress) for a period of three years. The stipend will be £1,450 plus fees to the maximum of £800 per annum, and only exceptional well-qualified candidates will be considered.
Applications to the Senior Assistant Registrar, College Gate, St Andrews, Fife KY16 9AY, not later than May 1, 1977.

LONDON
THE UNIVERSITY
ROYAL POSTGRADUATE MEDICAL SCHOOL
ASSISTANT SECRETARY (PERSONNEL)

Applications are invited for the post of Assistant Secretary (Personnel). The successful candidate will be responsible for the development and management of the full range of personnel services in the School, which employs approximately 660 staff.
Applicants should possess a degree or equivalent qualification and experience in the general personnel field including industrial relations would be an advantage.
Salary: University Administrative Grade IA [illegible] London Allowance per annum. Promotion prospects to Grade II, rising to £8,665 plus £450 London Allowance per annum.
Further particulars are available from the Secretary, RPMS, 150 Du Cane Road, London, W12 0HS, quoting ref. No. 1/8 THES (telephone 01-743 5338).

LONDON
THE UNIVERSITY
READERSHIP or LECTURESHIP in FRENCH GOVERNMENT and POLITICS at THE LONDON SCHOOL OF ECONOMICS AND POLITICAL SCIENCE

Applications are invited for the above Readership or Lectureship tenable at the London School of Economics and Political Science from 1 October 1977. One appointment only will be made.
Applications for the Readership (10 copies) should be received by Friday, 1 April 1977, by the Academic Registrar, University of London, Senate House, WC1E 7HU, from whom further particulars should be obtained.
Applications for the lectureship should be sent, by the same date, to the Administrative Officer (Room H.610), The London School of Economics and Political Science, Houghton Street, London WC2A 2AE, from whom application forms and further particulars are available.

LONDON
THE UNIVERSITY
CHAIR OF MEDICAL PHYSICS AT THE ROYAL POSTGRADUATE MEDICAL SCHOOL

The Senate invite applications for the above Chair, which becomes vacant on October 1, 1977.
Applications (10 copies) should be received not later than Monday, April 18, 1977, by the Academic Registrar (THES), University of London, Senate House, London WC1E 7HU, from whom further particulars are available.

LONDON
UNIVERSITY OF LONDON GOLDSMITHS' COLLEGE

Applications are invited for the following two posts:—
(1) LECTURESHIP in DRAMA (design): Grade II (set and lighting design).
(2) LECTURESHIP in DRAMA (classics): Grade II (Greek and Roman dramatic literature and theatre).
Write for further particulars (stating clearly which post) and enclosing a stamped addressed envelope, to the Personnel Officer, University of London Goldsmiths' College, New Cross, London SE14 6NW, to whom applications should be sent by 25th March, 1977.

LONDON
THE UNIVERSITY
CASSEL CHAIR OF ECONOMICS WITH SPECIAL REFERENCE TO MONEY AND BANKING AT THE LONDON SCHOOL OF ECONOMICS AND POLITICAL SCIENCE

The Senate invite applications for the above Chair, which becomes vacant on 1 October, 1977.
Applications (10 copies) should be received not later than Friday, 15 April, 1977, by the Academic Registrar (THES), University of London, Senate House, London WC1E 7HU, from whom further particulars are available.

LONDON
THE UNIVERSITY
THE MIDDLESEX HOSPITAL MEDICAL SCHOOL
MEDICAL STATISTICIAN

Applications are invited for this post in the School's Department of Community Medicine situated at the Central Middlesex Hospital, London NW10. The post is supported by the Department of Health and Social Security for three years. The Statistician will work with a research team carrying out a national study of childhood encephalopathy and immunisation and a variety of other epidemiological and health care research projects. The appointee will take responsibility for the continued development and maintenance of the Department's considerable local data processing facilities and there will be access to the London University Computer systems.
Applicants should have had considerable previous experience in Applied Statistics, preferably in medico-social research. Knowledge of a programme language such as Fortran is essential.
Starting salary up to £4,400 (inclusive of London allowance) plus superannuation.
Applications, including a curriculum vitae, and the names and addresses of two referees, to Professor D. L. Miller, Department of Community Medicine, Central Middlesex Hospital, Acton Lane, London NW10 7NS, by 25 March, 1977. Further particulars may be obtained from Professor Miller.

LEEDS
THE UNIVERSITY
SCHOOL OF GEOGRAPHY

Applications are invited for a post of LECTURER in GEOGRAPHY. Preference will be given to applicants with teaching and research interests in environmental economics, natural resources or a related field.
The post is tenable from October 1, 1977. Salary on the scale £3,333 to £6,665.
Application forms and further particulars may be obtained from the Registrar, The University, Leeds LS2 9JT, quoting reference number 32/5/A. Closing date for applications 20 April, 1977.

NEW ZEALAND
MASSEY UNIVERSITY
Palmerston North, New Zealand
LECTURER IN CLASSICAL STUDIES

Applications are invited for a second lectureship in Classical Studies in the English Department. Candidates with experience or special interests in any field of Classical Studies, or with additional qualifications in English, will be considered.
Salary within the range NZ$9,365-$11,465.
Further details of the position, together with conditions of appointment, may be obtained from the Association of Commonwealth Universities (Appts.), 36 Gordon Square, London WC1H 0PF, or from the Registrar of the University.
Applications close on 15 April 1977.

NEW ZEALAND
MASSEY UNIVERSITY
Palmerston North, New Zealand
POSTDOCTORAL FELLOWSHIP INSECT-PLANT RELATIONS

Applications are invited from suitably qualified ecologists for a postdoctoral fellowship in the Department of Botany and Zoology.
The fellowship would be tenable for two years, and the appointee would be expected to work on the ecology of insects of importance to agriculture or forestry.
The fellowship will carry an annual emolument of NZ$9,365. Travelling expenses up to NZ$1,400 may be provided.
Further details of the position, together with conditions of appointment, may be obtained from the Association of Commonwealth Universities (Appts.), 36 Gordon Square, London WC1H 0PF, or from the Registrar of the University. Applications close on 15 April, 1977.

NEWCASTLE UPON TYNE
THE UNIVERSITY
DEPARTMENT OF STATISTICS
POST-DOCTORAL RESEARCH ASSOCIATE

Applications are invited for a post-doctoral Research Associate to work on the statistical analysis of [illegible] data. The investigation is supported by S.R.C. Previous experience of Statistics is not essential. Candidates may wish to convert at research level from other subjects such as Pure Mathematics. The appointment would normally be tenable for two years commencing 1 October, 1977.

Salary will be within the range £3,333 to £3,761, according to age and qualifications. Membership of the University Pension Scheme will be required.

Applications should be submitted with curriculum vitae and the names of two referees to Professor R. L. Plackett, Department of Statistics, The University, Newcastle upon Tyne, NE1 7RU, from whom further particulars may be obtained.

NEW ZEALAND
MASSEY UNIVERSITY
Palmerston North, New Zealand
LECTURESHIP/SENIOR LECTURESHIP IN REPRODUCTION

Applications are invited for a teaching position in applied animal reproduction in the Department of Veterinary Clinical Sciences to commence in June, 1977.

The successful appointee will be required to contribute to the teaching of the course in reproduction (including obstetrics) to veterinary students. Postgraduate training in reproduction and an interest in the application of reproductive health programmes to the herd and flock situation is desirable. A registrable veterinary qualification is essential.

Salary: Lecturer NZ$9,368 to NZ$11,465; Senior Lecturer NZ$11,868 to NZ$13,615.

Conditions of appointment and further details of the position and of the University may be obtained from the Association of Commonwealth Universities (Appts.), 36 Gordon Square, London WC1H 0PF, or from the Registrar of the University.

Applications close on 22 April, 1977.

THE OPEN UNIVERSITY
INSTITUTE OF EDUCATIONAL TECHNOLOGY
AUDIO-VISUAL MEDIA RESEARCH

Applications are invited for the following posts:
(1) LECTURER in MEDIA RESEARCH METHODS
(2) RESEARCH FELLOW (Audio-Visual Media Research) (This appointment is for a period of 12 months only.)
The successful applicants will join a small team investigating the most effective methods of using television, radio and other audio-visual media for teaching Open University students. They will work closely with BBC producers, course teams and administrators.

Applicants for both posts should be trained and experienced in social science research methods, or educational evaluation. Thus, they will normally have at least a B.A., B.Sc., or higher degree in psychology, education, mass communications, statistics or related subjects, and full-time research experience in the social sciences or education or broadcasting. Experience in broadcasting or in the design of audio-visual teaching materials would be a distinct advantage.

Salary scale: Lecturer £3,333 to £6,665; Research Fellow £3,333-£5,027.

Further particulars and application forms are available from the Personnel Manager (IE), Open University, Walton Hall, Milton Keynes, MK7 6AL. Telephone Milton Keynes 63868 (answer phone).

Closing date for applications, 23rd March, 1977.

THE OPEN UNIVERSITY
STAFF TUTOR IN EARTH SCIENCES
EAST MIDLANDS REGION

Applications are invited for a full-time post of Staff Tutor in Earth Sciences, available from 1st April, 1977, or as soon as possible thereafter. The Staff Tutor will be appointed to the Faculty of Science and will be based at the University's Regional Office in Nottingham.
The main duties of the Staff Tutor will include liaison with members of the University's Central academic staff and assisting the Regional Director (East Midlands) in the appointment, training and supervision of part-time tutors. Commencing salary will be within the Lecturer Scale £3,333 to £6,665 per annum with U.S.S. benefits.
Details and application forms are available by postcard request from The Personnel Manager (STES 2), The Open University, P.O. Box 75, Walton Hall, Milton Keynes, MK7 6AL. Telephone Milton Keynes 63868. Closing date 25th March, 1977.

OXFORD
THE UNIVERSITY
JUNIOR LECTURESHIP IN MATHEMATICS

Applications are invited for a Junior Lectureship in any branch of Pure or Applied Mathematics. The appointment is for a period of three years from October, 1977, or as soon as possible thereafter, and is not renewable. Salary will be on the scale [illegible].

Further details may be obtained from the Secretary of Faculties, University Offices, Wellington Square, Oxford, OX1 2JD, to whom applications (including the names of two referees) should be sent not later than March 31, 1977.

Universities continued

THE OPEN UNIVERSITY

FACULTY OF SCIENCE

Tenured LECTURESHIPS are available in the following disciplines:

BIOLOGY—applicants should have special interests in Plant, Animal or Cell Physiology, Evolution, Behaviour or Genetics.

CHEMISTRY — applicants should have special interest in either Organic Chemistry or Inorganic Chemistry.

EARTH SCIENCES—applicants should have special interests in Palaeontology or Palaeoecology; Geophysics and/or Geochemistry.

PHYSICS—applications will be welcome from both Experimental and Theoretical Physicists.

The preparation of Open University courses involves writing course text and assessment materials, making television and radio programmes, devising home experiments, and planning and participating in Summer School activities. Applicants should have a keen interest in teaching and should be willing to work as a member of a Course Production Team. The successful candidates will be expected to maintain an active interest in research.

The appointments are available from April 1, 1977, or as soon as possible thereafter. Commencing salary is likely to be within the lower half (£3,333 to £4,811) of the Lecturer Scale (£3,333 to £6,665 per annum).

Further particulars of these appointments and application forms are obtainable, by postcard request please, from The Personnel Manager (S2), The Open University, Box 76, Walton Hall, Milton Keynes, MK7 6AL. Telephone Milton Keynes 63868/9. (There is a 24-hour telephone answering service.)

Please state clearly in which discipline you are interested.

THE OPEN UNIVERSITY

FACULTY OF SOCIAL SCIENCES

LECTURER IN GOVERNMENT

Applications are invited for the post of Lecturer in Government. Candidates should have a good general knowledge of the discipline, with a particular interest in international politics and some knowledge of political philosophy, together with experience in teaching at university level.

The person appointed will be expected to contribute to correspondence courses and to radio and television programmes; an ability to write clearly and cogently, to co-operate with others in a "course team" context, and to produce material to a deadline, is essential.

Salary will be at an appropriate point on the scale £3,333 to £6,665 p.a., plus U.S.S. benefits.

Application forms and further particulars are available, by postcard request please, from The Personnel Manager (LG2), The Open University, Box 76, Walton Hall, Milton Keynes, MK7 6AL, telephone Milton Keynes 63868. Closing date for applications, March 25, 1977.

PAPUA NEW GUINEA

UNIVERSITY OF TECHNOLOGY

UNIVERSITY LIBRARIAN

Applications are invited from suitably qualified and experienced librarians for the position of University Librarian. The successful applicant will be expected to continue the development of the library and audio-visual services relevant to tertiary-technical education in Papua New Guinea. Candidates should have proven administrative ability in academic librarianship (including staff development) and have experience in audio-visual production services.

The Matheson Library provides central library and audio-visual service to the campus. An extension, currently under construction, will provide a total of 480 reader spots, and audio-visual production and maintenance facilities. The Library is the leading technical library in the South Pacific region, and also operates as a public library. While foreign aid sources have become most important for the supply of overseas staff and for equipment, the majority of new books will in future be acquired through gift and exchange.

The Library is nationalising its staff as rapidly as possible, and employs a training librarian. The Library's current staff total 30, including 5 overseas professional staff.

Salary: is that of a Professor—K19,629 per annum [illegible] Allowances are payable as follows: Married K1,500 per annum, Single K1,300 per annum. In certain circumstances a child allowance of K156 per annum is also payable. An educational allowance and additional fares may be provided for children being educated away from their parents place of residence. Other benefits include furnished housing (hard goods only) supplied at nominal rental, leave fares to place of recruitment every second year and equivalent fares to Canberra, Australia, each alternate year and six weeks annual leave. Superannuation benefits apply in most circumstances. Study leave of six months will accrue after five semesters of service.

Appointment will be on a contract basis for a maximum of six years in the first instance. The University reserves the right to make no appointment or to make an appointment by invitation at any stage.

Further information will be forwarded to all applicants. Applications are required by 15 April, 1977, and should be sent to the Registrar, The Papua New Guinea University of Technology, P.O. Box 793, Lae, Papua New Guinea. A copy of the application should be sent to the Association of Commonwealth Universities (Appts.), 36 Gordon Square, London, WC1H 0PF.

OXFORD

THE UNIVERSITY

UNIVERSITY LECTURESHIP IN SOCIAL ANTHROPOLOGY

The University proposes to appoint as soon as possible a LECTURER in SOCIAL ANTHROPOLOGY. The lecturer's teaching will be expected to cover a wide range in Social Anthropology, including the supervision and examination of students working for the (postgraduate) Diploma in Social Anthropology, and for research degrees. Preference will be given, other things being equal, to candidates with special competence in the field of South-East Asia, including Indonesia.

Applications (nine copies), including a curriculum vitae with full details of qualifications, previous experience, publications, and the names of three academic referees, should be sent to the Secretary of Faculties, University Offices, Wellington Square, Oxford, OX1 2JD (to whom any request for further information should be addressed) so as to reach him not later than Friday, 22 April, 1977.

OXFORD

THE UNIVERSITY

UNIVERSITY LECTURESHIP IN METALLURGY AND SCIENCE OF MATERIALS

The University proposes to appoint a University Lecturer in Metallurgy and Science of Materials. The stipend will be according to age on the scale £3,333 per annum at age 21 or under, to £7,087 at age 42 or over, with superannuation. It is hoped that the successful candidate will take up the post on 1st October, 1977. The post may be held in conjunction with a non-stipendiary Fellowship at St. Cross College.

Further particulars may be obtained from Professor Sir Peter Hirsch, Department of Metallurgy and Science of Materials, Parks Road, Oxford OX1 3PH, to whom applications (four typed copies), including a statement of qualifications and publications, and the names of three referees should be sent by 18th April.

PAPUA NEW GUINEA

THE UNIVERSITY (Port Moresby)

Applications are invited for the post of PALAEONTOLOGIST-STRATIGRAPHER.

The appointee will join the five-man Geology Department, to teach Historical Geology, Palaeontology, and Stratigraphy suitable for students in preliminary university year, in agriculture and sciences other than geology, and in the geologic curriculum leading to the B.Sc. Duties will include instruction (lecture, tutorial, laboratory, and individual studies), expansion and curation of collections, and contributions to non-instructional planning and administration of departmental operations. Research will be encouraged, especially that involving rocks of Papua New Guinea; research opportunities are best in recent sediments, particularly reefal, in depositional environments of Tertiary limestones, Tertiary abyssal cherts, and Mesozoic mudstones, in Mesozoic palynology, Tertiary larger foraminifera, and Mesozoic and Cenozoic nannofossils, and in the bearing of these upon plate tectonics of the region. A higher degree is required and some practical or academic experience in a developing country is desirable.

Applicants in the beginning of career will be favoured. Appointment at the Lecturer Grade 2 level; availability in July, 1977, is critical.

Salary: K9,534 to K13,608 per annum (£1 sterling equals K1.37). In addition an allowance of K1,300 per annum if single is payable. An extra K1,000 Marriage Allowance and K156 per child Child Allowance may also be payable.

Applicants should forward a detailed curriculum vitae and recent small photograph, and should request three referees to write direct to the Secretary, Box 4820, University P.O., Papua New Guinea, concerning their suitability for appointment. Conditions include provision of housing, annual leave fares, study leave and F.S.S.U. superannuation.

Further details and the conditions of appointment are available from the Secretary, with whom applications close on 18th April, 1977. Applicants resident in U.K. should also send one copy of their application to the Inter-University Council, 90/91 Tottenham Court Road, London W1P 0DT. Further particulars are available from either address.

SOUTHAMPTON

THE UNIVERSITY

SOUTHERN SCIENCE AND TECHNOLOGY FORUM

RESOURCE UNIT FOR SCHOOLS SCIENCE AND TECHNOLOGY

The Unit, which is sponsored by the Department of Industry for an initial three-year period and based at the University of Southampton, is aimed at supporting the teaching of science and technology particularly to the 13 to 18 age group in schools by developing and providing exhibitions, apparatus and teaching aids to illustrate the applications of scientific concepts in industry and everyday life.

Applications are invited for the post of PROJECT MANAGER (male or female) who will be responsible for developing ideas by working with teachers and appropriate people outside schools.

Candidates should have teaching experience and/or design and engineering skills. Personal qualities will be very important in launching and sustaining this new project and the successful candidate can expect a salary in the region of £6,500 per annum.

Further information available from the Director, Southern Science and Technology Forum, The University, Southampton SO9 5NH. Closing date for applications Friday, April 15, 1977. Please quote reference T.H.E.S.

READING

THE UNIVERSITY

LECTURESHIP IN GEOLOGY

Applications are invited for a LECTURESHIP in GEOLOGY for a fixed period of three years. Candidates will be expected to teach geochemistry and non-clastic sedimentology in the courses leading to B.Sc. degrees in Geochemistry, Geophysics and Geology and M.Sc. in Sedimentology and its applications. Candidates should have a major research interest in geochemistry.

The appointment will be from a date to be arranged with the successful candidate but not later than 1 October, 1977.

Further information may be obtained from the Registrar (Room 214, Whiteknights House), The University, Whiteknights, Reading RG6 2AH, by whom applications should be received not later than 25 April, 1977.

WARWICK

THE UNIVERSITY

LECTURESHIP IN ENVIRONMENTAL SCIENCES

Applications are invited for a Lectureship in Environmental Sciences, tenable from 1st January, 1978. Applicants should have interests in one or more of the fields of marine or freshwater biology, microbial ecology, ecology of natural habitats. Initial salary within the first four points of the Lecturer scale: £3,333—£3,975 (—£6,655 per annum) with superannuation benefits.

Further particulars and application forms from the Academic Registrar, University of Warwick, Coventry CV4 7AL, quoting Ref. No. 30/3L/77. Closing date for receipt of applications is 15th April, 1977.

THAILAND

THE ASIAN INSTITUTE OF TECHNOLOGY

Applications are invited from Australian citizens for the faculty positions in the following fields:

APPLIED MATHEMATICS, ENGINEERING ECONOMICS.

CONSTRUCTION ENGINEERING and MANAGEMENT, INDUSTRIAL ENGINEERING and MANAGEMENT.

IRRIGATION ENGINEERING, STRUCTURAL ENGINEERING and MATERIALS.

Appointments available at assistant, associate or full professor levels with attractive conditions and negotiable salary. Preference given to candidates with a Ph.D. in the required field. Duties include: teaching postgraduate courses, supervision of master and doctoral degree candidates, research including contract research and assisting in extension programmes. Appointments begin 1 September, 1 January, or 1 May.

The A.I.T., established in 1959, is situated in Thailand on 400 acre campus 42 km north of Bangkok. The Institute is an international, autonomous, postgraduate engineering institution governed by an International Board of Trustees. Students from 20 Asian countries and an international faculty are involved in advanced education in engineering, science, and allied fields. The Institute's plant and laboratories are well equipped. Support for A.I.T. comes from 30 governments throughout the world and numerous international organisations. Two Australians serve on the Institute's Board of Trustees. The Australian Government under an aid grant of $3,000,000 is providing funds for Australian faculty positions.

Applications, quoting Ref. A2/77, and including curriculum vitae and the names and addresses of three referees should be sent to the Vice-President and Provost, A.I.T., P.O. Box 2754, Bangkok, Thailand.

THAILAND

ASIAN INSTITUTE OF TECHNOLOGY

ACADEMIC APPOINTMENTS

Applications are invited for academic positions in the following fields:

APPLIED MATHEMATICS

ENGINEERING ECONOMICS

ENVIRONMENTAL ENGINEERING

HUMAN SETTLEMENTS PLANNING

INDUSTRIAL ENGINEERING AND MANAGEMENT

RURAL PLANNING AND DEVELOPMENT

Appointments at the assistant, associate or full professor rank. Salary negotiable. Preference given to candidates with a Ph.D. in the required field.

Duties include: teaching postgraduate courses, supervision of master and doctoral degree candidates, research including contract research and assisting in continuing education programmes.

Appointments begin on September 1, January 1, or May 1.

The Asian Institute of Technology, situated in Bangkok, Thailand, is an international, autonomous postgraduate engineering educational institution with an International Board of Trustees, international faculty and students from twenty Asian countries.

Support for AIT comes from twenty governments throughout the world.

Applications including curriculum vitae and names and addresses of three referees should be sent to the Vice-President and Provost, AIT Box 2754, Bangkok, Thailand.

SURREY

THE UNIVERSITY

DEPARTMENT OF ECONOMICS

LECTURER IN ECONOMICS

Applications are invited for the post of LECTURER in the DEPARTMENT of ECONOMICS, available from October, 1977. Applicants should be able to teach micro-economic theory and preferably should have a research interest in energy economics. The appointment will be made within the salary range £3,333 to £6,665, according to qualifications and experience with superannuation under U.S.S. conditions.

Interested candidates are asked to obtain a copy of the further particulars from the Academic Registrar (LEG), University of Surrey, Guildford, Surrey GU2 5XH, or telephone Guildford 71281 ext. 452.

Applications, in the form of a curriculum vitae, including the names and addresses of two referees, should be sent to the same address by April 1, 1977.

Adult Education

GWYNEDD

COLEG HARLECH RESIDENTIAL COLLEGE FOR ADULT EDUCATION

TUTOR IN PHILOSOPHY

Applications are invited for the above post. Applicants should be graduates with a good honours degree. Salary on the scale £3,333-£6,665 with superannuation benefits.

Further particulars and application form from the Registrar, Coleg Harlech, Harlech, Gwynedd LL46 2PU. Closing date for applications 28 March 1977.

General Vacancies

THE ASSOCIATED EXAMINING BOARD

FOR THE GENERAL CERTIFICATE OF EDUCATION

Wellington House, Aldershot, Hampshire, GU11 1BQ

Applications are invited for the post of CHIEF EXAMINER in GEOLOGY at both "O" and "A" levels. The post will involve the setting and marking of question papers, the supervision of Assistant Examiners and the responsibility for the conduct of the Board's Geology examinations at "O" and "A" levels. Applicants must be graduates with at least five years' teaching experience and appropriate examining experience in Geology, or a related subject, at the appropriate levels.

An application form and further details may be obtained from The Secretary (AII) at the Board's offices, to whom completed application forms should be returned within three weeks of the appearance of this advertisement.

Fellowships

BIRMINGHAM

THE UNIVERSITY OF ASTON

JAMES WATT TRAVELLING FELLOWSHIP 1977

The James Watt Memorial Foundation is offering a Travelling Fellowship to the value of £3,000 to enable holders of a higher degree of the University of Aston in Birmingham awarded between January 1st, 1974, and December 31st, 1976, to broaden their experience by studying abroad, for a period of not less than six months in 1977-78, some applied aspect of their discipline. Preference will be given to projects generally concerned with engineering or technology.

Full particulars and application forms (returnable by June 1st, 1977) may be obtained from: The Registrar, The University of Aston in Birmingham, Gosta Green, Birmingham B4 7ET.

THE HEALTH EDUCATION COUNCIL

FELLOWSHIPS

The Health Education Council is offering a total of eight Fellowships (four in Nottingham and four in Manchester) beginning in October 1977, for persons who wish to take either of the following courses:

(1) M.Sc. in COMMUNITY MEDICINE (Health Education option) in the Department of Community Medicine, University of Manchester.

(2) MASTER of MEDICAL SCIENCES in COMMUNITY MEDICINE (Health Education elective) in the Department of Community Health, University of Nottingham.

In both cases, Fellowships are for a maximum of two years' full-time study. Candidates must satisfy the appropriate course entry requirements (normally a good degree in, for example, the biological sciences; the social sciences; education; medicine; nursing or dentistry). Only U.K. citizens living in England, Wales and Northern Ireland are eligible.

In awarding Fellowships particular attention will be paid to the relevance of the candidate's experience in health education or a related field.

Awards will not be less than £1,750 per annum but will depend on individual circumstances such as past salary and experience.

For further information and application forms, please write to either: Professor Alwyn Smith, Department of Community Medicine, University of Manchester, Stopford Building, Oxford Road, Manchester, M13 9PT; or Professor Maurice Backett, Department of Community Health, University of Nottingham, Medical School, Clifton Boulevard, Nottingham, NG7 2UH.

Closing date for applications: 31st March.

THE WELLCOME TRUST

Research Grants for studie in the History of Medicin

The Wellcome Trustees are willing to consider tions for grants from post-doctoral historians, graduates of British Universities, holding posts in sity departments and actively engaged in inde research in a subject related to the history of Individual grants of up to £10,000 for a period of two years may be made for the provision of leave, to undertake a specific project. Such leave be undertaken in the candidate's own departmen a location approved by the Trustees.

Applicants are asked to put forward their case letter of not more than two foolscap pages. A curr vitae and the names of two referees must also be vided. A more detailed statement may be re after the Trustees have made a preliminary selec The Wellcome Trust is responsible for the suppo the Wellcome Institute for the History of Medicin several medical history units in universities. The has other schemes for the provision of smaller and a limited number of training scholarships and ships.

The closing date for applications is March 31, a should be sent to :—

The Assistant Director (History of Medicine)
The Wellcome Trust
1 Park Square West, London NW1 4LJ

Polytechnics

Ulster College Northern Irelan Polytechnic

Faculty of Technology

HEAD OF SCHOOL OF BUILDING

Salary Scale: £7,707-£8,913

The School of Building includes the disci of Architecture, Building and Environme Health.

Candidates for this post should have su experience of teaching, curriculum develop and research in an institution of higher edu tion, and possess professional qualification an appropriate discipline.

The School is committed to the concept of sandwich course and the successful app will be required to maintain and foster c ties with industry, and support the profession activities at local branch and national levels. The Polytechnic is a direct grant instit with an independent Board of Governors opened in 1971 and now has a student pop tion of some 6,100. It has extensive new pose built accommodation, including 7 residential places on the 114 acre camp overlooking the sea at Jordanstown, a pleasa and quiet residential area. There is a sche of assistance with removal.

The Polytechnic is creating a limited numb of PROFESSORSHIPS in which acade leadership—including teaching, course develo ment and research—will be emphasized. Th successful applicant for this post will be eligib to apply.

Further particulars and application forms wh must be returned by March 20 may be obta by telephoning Whiteabbey (0231) 65131, e 2243, or by writing to:

The Establishment Officer, Ulster Colleg
The Northern Ireland Polytechnic,
Newtownabbey, Co. Antrim, BT37 0Q

oxford polytechn

Temporary Lecturer—Senior Lectureship in Mammalian Physiology

(£3,591-£6,729 p.a., under review) for 1 Septe ber, 1977, to 31 August, 1978.

Further information and application forms fr David Mobbs, Head of Biology, Oxford Polytech nic, Oxford, OX3 0BP, to whom applications, in cluding the names of 3 referees, should be se by 28 March, 1977.

CITY OF BIRMINGHAM

THE POLYTECHNIC

DEPARTMENT OF ECONOMICS AND SOCIAL SCIENCE

Senior LECTURER / LECTURER II in GOVERNMENT / PUBLIC ADMINISTRATION required to teach on B.A. (Hons.) Government and H.N.C. Public Administration courses. Applicants should have degree in political science, and research or teaching experience.

Salary scale: Senior Lecturer: £5,031-£5,955 (bar) £6,417, plus £312 supplement. Lecturer II: £3,279-£5,493, plus £312 supplement.

Further details and application form (to be returned by 25th March, 1977) from: The Personnel Officer, City of Birmingham Polytechnic (THES), Room No. H.411, Perry Barr, Birmingham B42 2SU.

LANCHESTER

THE POLYTECHNIC

FACULTY OF SOCIAL SCIENCE

LECTURER GRADE 2 ACCOUNTANCY

Salary: within the £3,279 to £5,493 plus supplement per annum. In certain circumstances may be above the of the scale.

For application form further particulars in writing enclosing a stamped and addressed to the Assistant Secretary to the Assistant Lanchester Polytechnic, Priory Street, CV1 5FB, returnable ten days of the appearance of this advertisement.

Polytechnics continued

ULSTER COLLEGE

THE NORTHERN IRELAND POLYTECHNIC
Faculty of Business Administration

SENIOR LECTURER—Hotel and Institutional Operations with particular reference to Food Production

To act as subject team leader for food studies and play a leading role in the development of the new Degree proposals.

LECTURER II—Theoretical and Practical Aspects of Food/Accommodation Studies

To teach on the Higher National Diploma in Hotel and Catering Administration and the Higher National Diploma in Institutional Management and to develop this work to Degree level.

The successful candidate will be expected to teach at Degree and Diploma standard in one or more of the following areas. Food Production, Service of Food and Drink, Reception, Accommodation Studies. Applicants should have appropriate academic or professional qualifications and relevant industrial experience in the field of Hotel Catering and Institutional Management.

Teaching and research experience would be an advantage.

SENIOR LECTURER—Law

Applicants must have an Honours Degree in Law and an enthusiasm for teaching. In addition, some of the following would be an advantage (a) A higher degree and research experience; (b) Professional qualification and experience; (c) Teaching and course development experience.

LECTURER II—Management Accountancy

Applicants should have an honours degree and/or be a qualified ACMA/ACA/ACCA with an enthusiasm for teaching.

LECTURER II—Financial Accountancy

Applicants should have an honours degree and/or be a qualified ACMA/ACA/ACCA/IPFA, ACIS with an enthusiasm for teaching.

Faculty of Social and Health Sciences

LECTURER I or LECTURER II

(a) Physiotherapy

(b) Occupational Therapy

Applications are invited from chartered physiotherapists and occupational therapists to teach on Diploma and Degree courses. Applicants should have had several years' experience in the clinical field and preferably hold a degree or teaching qualification. In the event of the successful applicants not holding a teaching qualification they would be expected to take the In-Service Certificate in Education (Further Education) course of the Polytechnic: successful applicants not holding a degree would be encouraged to pursue qualifications by part-time study. The appointment will be made at a point appropriate to the applicants' experience and qualifications.

Faculty of Technology

LECTURER II—Building Technology

Applicants should have a knowledge and understanding of the principles, factors and requirements which influence the design and construction of buildings together with a modern approach to the practical production and construction processes involved and be graduates or a member of a professional institution associated with the construction industry.

Salary scale: Senior Lecturer: £5,031-£5,955/£6,417.
Lecturer II: £3,279-£5,493.
Lecturer I: £2,469-£4,377.

All points on scales subject to £312 supplement.

The Polytechnic is a direct grant institution with an independent Board of Governors. It opened in 1971 and now has a student population of some 6,100. It has extensive new purpose-built accommodation, including 750 residential places on the 114 acre campus overlooking the sea at Jordanstown, a pleasant and quiet residential area. There is a scheme of assistance with removal.

Further particulars and application forms which must be returned by March 31 (April 28 for Physiotherapy appointment) may be obtained by telephoning Whiteabbey (0231) 65131, extension 2243, or by writing to:

The Establishment Officer, Ulster College, The Northern Ireland Polytechnic, Jordanstown, Newtownabbey, co Antrim BT37 0QB.

SHEFFIELD CITY POLYTECHNIC

FACULTY OF SOCIAL STUDIES
DEPARTMENT OF POLITICAL STUDIES

LECTURER II

In Public Administration

Applications are invited for the above appointment from those qualified to teach in undergraduate and postgraduate courses.

Salary Scale: £3,279-£5,493 plus £312.

Application forms and further details obtainable from the Personnel Officer, Sheffield City Polytechnic, Halfords House, Fitzalan Square, Sheffield S1 2BB, to whom completed forms should be returned by 14 days.

LONDON

THAMES POLYTECHNIC

SCHOOL OF MATHEMATICS, STATISTICS AND COMPUTING

RESEARCH ASSISTANT

A vacancy exists for a RESEARCH ASSISTANT to read for a higher degree in one of the following areas: (a) the development of matter and radiation in the early universe; (b) use of data bases and the logical structure of data; (c) a critical study of the theory of least squares. Applications are invited from graduates with suitable qualifications.

Salary: £2,646 to £2,808 including London weighting.

Further particulars and form of application may be obtained from the Staffing Officer, Thames Polytechnic, Wellington Street, London SE18 6PF, to whom completed applications should be returned by 30th March, 1977.

Teesside Polytechnic

HEAD OF DEPT. of CHEMICAL ENGINEERING (Grade V)

A young, highly qualified (preferably Ph.D), professional Chemical Engineer with a good research record, is required to lead an enthusiastic team in degree teaching, postgraduate courses and research.

Candidates should be able organisers, and have a modern approach to Chemical Engineering and a broad technological outlook.

The Polytechnic is creating a limited number of PROFESSORSHIPS for academics of eminence who meet certain criteria. The successful applicant for this post may be eligible to apply.

Salary within the scale £7,395 to £8,271 plus £312 supplement per annum.

Application forms and further details from :—
The Director, Teesside Polytechnic, Middlesbrough, Cleveland TS1 3BA, returnable within 14 days.

PLYMOUTH POLYTECHNIC

LEARNING RESOURCES CENTRE AND COMPUTER CENTRE

AUTOMATION OF LIBRARY SYSTEMS

A RESEARCH ASSISTANT is required to carry out work leading to the implementation of an automated circulation system and a serials control system.

Candidates should have a good degree with substantial content of Computer Studies/Science. Experience of Cobol/Plan Programming in library or similar data processing field will be an advantage.

The appointment is for an initial period of one year with the possibility of renewal for a further one or two years.

The commencing salary will be either £2,469 or £2,721 with annual increments. An additional £312 p.a. supplement is also payable.

Application forms to be returned by March 25, 1977, can be obtained with further particulars from the Personnel Officer.

PLYMOUTH POLYTECHNIC DRAKE CIRCUS
PLYMOUTH PL4 8AA

SHEFFIELD CITY POLYTECHNIC

FACULTY OF ART AND DESIGN

Department of Sculpture

Principal Lecturer in Sculpture

Applications are invited from artists of distinction with considerable teaching experience and with good academic qualifications in Fine Art. The person appointed will provide academic leadership within the BA Fine Art (Sculpture) course and will undertake coordinating and administrative responsibilities. Applicants must be sympathetic to a wide range of work and knowledgeable in a variety of processes, since the Department supports students' individual development in many areas of creative, spatial experience and activity.

Salary Scale: £6,253-£6,954 (bar)-£7,890.

Application forms and further details obtainable from the Personnel Officer, Sheffield City Polytechnic, Halford House, Sheffield S1 2BB, to whom completed forms should be returned within 14 days.

THE POLYTECHNIC HUDDERSFIELD

Department of Geography and Geology

LECTURESHIPS IN GEOGRAPHY

ACA/121/122

Applications are invited from young graduates with interests in Physical Geography especially Hydrology and Applied Climatology, or Environmental Perception/Behavioural Geography, and especially Settlement Geography.

Appointments will be made to the Lecturer II scale with progression to the SL scale under the terms of the Burnham Report.

Salary: LII £3,279-£5,493
SL £5,031-£5,955 (bar). £6,417.
plus £312 supplement.

Further details and application forms, which should be returned by March 25, 1977, from the Establishment Office, The Polytechnic, Queensgate, Huddersfield HD1 3DH (Telephone 0484 22288, ext. 2224).

SHEFFIELD CITY POLYTECHNIC

Department of Mechanical and Production Engineering

LECTURER IN FLUID MECHANICS/THERMODYNAMICS

Required to teach at Degree level and contribute to the department's research programme. Applicants should hold a higher degree or have appropriate industrial experience. Experience of the application of thermo-fluid principles to Plant Design would be advantageous.

Salary scale: Lecturer II: £3,591-£5,805.

Application forms and further details obtainable from the Personnel Officer, Sheffield City Polytechnic, Halfords House, Fitzalan Square, Sheffield S1 2BB, to whom completed forms should be returned as soon as possible.

LONDON

THAMES POLYTECHNIC

SCHOOL OF HUMANITIES

LECTURER II IN THE DIVISION OF GEOGRAPHY

Applications are invited from candidates holding good honours degrees and with a special interest in underdeveloped regions. The post is available from 1 September, 1977.

Salary scale: £3,993 to £6,207 gross inclusive.

Further particulars and form of application may be obtained from the Staffing Officer, Thames Polytechnic, Wellington Street, London, SE18 6PF, to whom completed applications should be returned by 29 March, 1977.

TEESSIDE

THE POLYTECHNIC

DEPARTMENT OF SOCIAL STUDIES

LECTURER II/ SENIOR LECTURER IN SOCIAL WORK

Applications are invited for a post of lecturer in Social Work.

Salary: Lecturer II-Senior Lecturer £3,279 x £219-£5,031 (efficiency bar) x £231-£5,955 x £231-£6,417 plus £312 supplement.

Appointment will be made within the lower part of the above scale.

Application forms and further particulars are available from the Staffing Section, Teesside Polytechnic, Borough Road, Middlesbrough, Cleveland TS1 3BA.

Colleges of Further Education

HARPER ADAMS AGRICULTURAL COLLEGE NEWPORT, SHROPSHIRE

LECTURER GRADE 2

Vacancy from September 1, 1977, in Agricultural Department. Duties to include lecturing to H.N.D. Agricultural Marketing and Business Administration Course and other Agricultural courses. Essential requirement—degree in agriculture, agricultural economics, marketing or related subject. Teaching and/or industrial experience desirable. Salary in accordance with Burnham Scale for Establishments for Further Education 1976. Point of entry dependent on qualifications and experience.

Further particulars and application form from the Bursar, Harper Adams Agricultural College, Newport, Salop TF10 8NB. Essential to quote reference FM/2/8.

Courses

Garnett College

Advanced Courses of Study in Further Education

Applications are invited for the following courses:

Masters Degree (in Education)
University of London

Two years' part-time study. Specialises in extended study of further education. Equips students to undertake research in further education. Candidates must have initial teacher training and have reached a high level of attainment in the Diploma in Further Education or its equivalent.

Diploma in Further Education
University of London

One year full-time *or* three years' part-time study. Relates the study of further education to contemporary educational theory and to current social, political and economic developments. Students can further specialise in Psychology, Sociology, Philosophy, Educational Technology, Historical and Contemporary Studies, Educational Administration and Management, Aspects of Counselling, Comparative Education, etc. Is recognised by universities as a 'qualifying' examination for courses for higher degrees for both graduates and non-graduates. Candidates should have reasonably substantial teaching or administrative experience in further education, administration or industrial training.

Bachelor of Education
Council for National Academic Awards

Three or four years' part-time study. Extends the educational studies of the Certificate in Education course. Prepares candidates for further study and research in further education. Candidates should be serving teachers with an initial teaching qualification and a minimum of two years' experience.

ilea

Candidates for all courses should apply as soon as possible specifying the course(s) in which they are interested to: The Principal (Ref. THES), Garnett College, Downshire House, Roehampton Lane, London, SW15 4HR (01-789 6533).

ABERYSTWYTH

THE UNIVERSITY COLLEGE OF WALES

GRADUATE STUDIES IN INTERNATIONAL POLITICS

The department of INTERNATIONAL POLITICS offers two courses:

STRATEGIC STUDIES

A study of the military dimension of statecraft, including deterrence, conventional and guerrilla warfare, alliances, arms control and disarmament, political uses and ethics of force, defence policies of the major powers, and the history of strategic ideas.

BRITISH FOREIGN POLICY IN THE TWENTIETH CENTURY

An analysis of the major trends in British foreign policy since 1900, with optional seminars on Anglo-American relations, Britain and European integration, and British defence policy.

The courses extend over twelve months and lead to the degree of M.Sc. Econ. Examination consists of three papers and a short thesis.

For application forms and further details write to the Department of International Politics, The University College of Wales, Aberystwyth. (Tel. 0970 3111).

Special Education

STAFFORDSHIRE

EDUCATION COMMITTEE

WILMOT E.S.N. (S) SPECIAL SCHOOL

Wilmot Drive, Lower Milehouse Lane, Newcastle

Required as soon as possible a qualified and experienced TEACHER for this E.S.N. (S) Special School, Scale 1 post.

Application forms obtainable from and returnable to the Headteacher (stamped addressed envelope).

Colleges of Higher Education

LANCASHIRE

EDGE HILL COLLEGE OF HIGHER EDUCATION
Ormskirk

SUBJECT AREA OF HISTORY

LECTURER II in MODERN HISTORY required for 1st May or 1st September, to contribute to B.A. Hons./Ord. and B.Ed. Hons./Ord. courses in social and economic history of both Britain and Europe (from 18th Century to present day).

Salary: £3,591 to £5,805 (Bar £5,583).

Further details and application forms from the Director's Secretary.

Closing date: 31st March.

Colleges and Institutes of Technology

BARKING

(London Borough of)

OCCUPATIONAL PSYCHOLOGY UNIT

A temporary appointment (until February, 1979) is available at this unique unit at Barking College of Technology which provides a research and advisory service to industrial and other organisations and works closely with other college departments and the local careers service.

The successful applicant is likely to be qualified in psychology or occupational psychology and to have experience of either (a) full-time research, preferably in the field of job satisfaction, or (b) of advisory or consultancy work, vocational guidance or lecturing; experience of selection and of the development of courses in interviewing and testing would be an advantage.

The appointment is likely to be on the Burnham Lecturer Grade 1 Scale, £2,469 to £4,377 per annum plus £312 supplement plus £402 London Weighting.

For full details contact John Toplis or Tony Boyle, Occupational Psychology Unit, Barking College of Technology, Dagenham Road, Romford, Essex (01-592 7070), as soon as possible.

BOLTON

INSTITUTE OF TECHNOLOGY

LECTURER IN PHILOSOPHY

To teach mainly on full-time and part-time Humanities C.N.A.A. Degree Course. Applicants should have a good honours degree in Philosophy and experience of postgraduate research.

The appointment will be made at Lecturer I.

Salary £2,469 to £4,377 plus £312.

Application forms and further particulars may be obtained from the Chief Administrative Officer, Bolton Institute of Technology, Deane Road, Bolton BL3 5AB, to whom they should be returned by March 21st, 1977.

Librarians

CHESTER COLLEGE OF HIGHER EDUCATION

LIBRARIAN

APPLICATIONS are invited from GRADUATE CHARTERED LIBRARIANS for the POST of LIBRARIAN at this College. (Salary Scale Lecturer II/Senior Lecturer, according to experience). A new library building will be ready for occupation by September, 1977.

Further particulars may be obtained from the Principal, Chester College, Cheyney Road, Chester, to whom completed applications, including names of two referees, should be sent not later than March 31st, 1977.

Librarians continued

The POLYTECHNIC WOLVERHAMPTON

Assistant Librarian

Subject Adviser in the Humanities

A graduate, with library qualifications and experience, and an out-going personality is required to provide bibliographical and information services and library education in the subject area, which is based in the new purpose-built main library.

Salary (equivalent to Burnham Lecturer II grade)—£3279—£5493 plus £312 supplement.

Further particulars and application forms available from:

The Establishment Officer,
The Polytechnic, Wolverhampton
WV1 1LY.

Announcement

The British Library REFERENCE DIVISION

Temporary Closure of Main Reading Room

The main Reading Room in Bloomsbury, normally closed for one week at the beginning of May, will in 1977 be closed (together with the North Library) from 30 April to 14 May inclusive for construction of a new reserved books area and improved photocopying facilities.

The Official Publications Library, accessible only from the North Entrance of the British Museum/British Library, will be open on 30 April and 9—14 May, from 10 a.m. to 4.45 p.m. only, but accommodation and facilities are very limited and readers are asked to avoid using the library altogether during this period if possible.

The Map Library will be open on the same days as the Official Publications Library from 10 a.m. to 4.30 p.m.

The Students' Room of the Dept of Manuscripts and the Reading Room of the Dept of Oriental MSS and Printed Books will be open throughout the period as usual.

Administration

LONDON, W.1
THE MIDDLESEX HOSPITAL MEDICAL SCHOOL
(University of London)

Applications are invited for a post of ADMINISTRATIVE ASSISTANT which will fall vacant in June, 1977. Previous experience in university administration and/or teaching is desirable. The duties will be in connexion with student admissions, records and curriculum matters; some committee work will also be involved. Typewriting ability is essential.

Starting salary up to £3,703 per annum (inclusive of £400 per annum London Allowance) depending upon age and experience. Superannuation under U.S.S.

Applications, including a Curriculum Vitae and the names and addresses of three referees, should be submitted to the Secretary, The Middlesex Hospital Medical School, London W1P 7PN, by March 25, 1977.

WINCHESTER
KING ALFRED'S COLLEGE OF HIGHER EDUCATION

Applications are invited for the post of ADMINISTRATIVE ASSISTANT to be responsible to the Academic Registrar for the work of the College Office; for the keeping of student records; for maintaining accurate statistics on student numbers; for the co-ordination of office procedures in connection with student interviews and admissions; and for other similar duties.

Experience in the use of computers for student records and in educational administration will be an advantage.

National Joint Council for Local Authorities conditions of service. Salary according to qualifications and experience on Scale A.P. 2/3, £2,841 to £3,594. Appointment with effect from 1st May 1977.

Applications, with curriculum vitae, to the Academic Registrar, from whom further details may be obtained.

Librarians

PLYMOUTH
COLLEGE OF ST. MARK AND ST. JOHN
COLLEGE LIBRARIAN

Applications are invited for the post of LIBRARIAN in this College who will be responsible for the organisation of the Library services and for the development of links involving other learning resources.

The College works in association with Plymouth Polytechnic and is developing links with the Devon County Library Service.

Applicants should be qualified Librarians with appropriate experience. It is anticipated that the appointment will be made at a salary equivalent to the Senior Lecturer Grade (£5,051 to £6,417 plus £312 supplement) but, for the exceptional candidate, the salary could be equivalent to Principal Lecturer Grade (£5,940 to £7,578 plus £312 supplement).

Full details of the post may be obtained, on receipt of a stamped addressed envelope, from the Principal, College of St Mark and St John, Derriford Road, Plymouth, PL6 8BH. Closing date for receipt of applications will be 2nd April, 1977.

Colleges and Departments of Art

LONDON
INNER LONDON EDUCATION AUTHORITY
CENTRAL SCHOOL OF ART AND DESIGN
DEPARTMENT OF LIBERAL STUDIES
HEAD OF DEPARTMENT
(Grade III)

Applications invited from qualified and experienced persons who can offer academic leadership, organisational skills and interest in research development in this key post.

Salary: £6,231 to £7,023 plus £402 Inner London Allowance plus £312 supplement.

Further particulars and application form from The Registrar, Central School of Art and Design, Southampton Row, London WC1B 4AP (telephone: 01-405 1825). Completed applications must be received by 21 March, 1977.

Classified Advertisements
To advertise in the THES phone
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Overseas

OVERSEAS TEACHING POSTS

HEAD, DEPARTMENT OF AIR CONDITIONING AND REFRIGERATION

(Iran)

Jundi Shapur University, Ahwaz

To establish, organise and manage a new department, and train lecturers.

PhD and relevant Engineering qualifications with at least 5 years' experience.

Salary: £11,500-£19,700 pa (approx).

Benefits: Housing allowance. One-year contract renewable. 77 HU 14

SENIOR LECTURER IN MEDICAL ENGINEERING

(Iran)

Jundi Shapur University, Ahwaz

To establish a new department, supervise technical staff and lecture.

PhD or MSc and at least 2 years' teaching experience.

Salary: £10,750-£14,200 pa (approx).

Benefits: Housing allowance. One-year contract renewable. 77 HU 15

ENGLISH LANGUAGE TEACHER

(Iran)

College of Nautical Studies, University of Baluchistan, Chah Bahar

To assist in the preparation of materials and to participate in the teaching of English and the monitoring of students' progress.

Degree, TEFL qualification, experience of ESP and of a direct teaching operation overseas.

Salary: £6,425-£7,865 pa.

Benefits: overseas and children's allowances; free accommodation; 2-year contract. 76 HU 113

MATERIALS PRODUCER (ELT)

(Oman)

Ministry of Education (English Department), Muscat

To produce support materials and audio visual aids, to undertake in-service course for teachers of English.

Candidates, men only, must have a postgraduate ELT qualification, 3 years' overseas ELT experience, and some experience in production of A/V materials.

Salary: £4,589-£5,618 pa.

Benefits: free furnished accommodation; overseas and children's allowances; 2-year contract renewable. 77 AE 3

TEACHER OF NUFFIELD PHYSICS
TEACHER OF SMP MATHEMATICS
TEACHER OF GENERAL SUBJECTS

(Brazil)

St Paul's School, Sao Paulo

Qualified teachers with at least 3 years' experience.

Salary: £6,300-£7,500 pa.

Benefits: overseas and accommodation allowances; medical scheme; superannuation; 2-year contract renewable. 77 PS 18-20

INFANT TEACHERS

(Iran)

The British School, Tehran

2 Assistant Infant Teachers.

1 Infant Teacher with ability to teach music.

Degree and/or Technical certificate. Infant teaching experience essential; team teaching experience very desirable. Single candidates only.

Salary: £3,979-£6,293 pa.

Benefits: rent allowance; employer's portion of UK superannuation; 2-year contract renewable. 77 HS 24-28

PRIMARY/SECONDARY TEACHERS

(Iran)

Rustan Abadian International School, Tehran
Primary Teacher (Post of responsibility)
Biology Teacher (Grades 9-11)
History Teacher (Grades 7/8/9-11)

Primary Teacher: Teaching certificate and 5 years' primary or middle school experience

Biology and History Teachers: degree and PGCE with 2 years' teaching experience.

Single candidates preferred.

Salary: £3,823-£6,856 pa.

Benefits: rent allowance; employer's portion of UK superannuation; 2-year contracts renewable. 77 HS 21-23

ELT MATERIALS PRODUCTION SPECIALIST

(Zambia)

United Nations Institute for Namibia, Lusaka

To produce, pilot, evaluate and revise ESP materials for students' academic needs.

Degree; 1-year postgraduate qualification in TEFL/TESL; 3 years' overseas experience, preferably teaching adults, and including ESP materials preparation.

Salary: £5,210-£7,054 pa.

Benefits: overseas and children's allowance; free accommodation; 2-year contract. 77 HO 21

HEAD OF ENGLISH

(Yemen)

National Institute of Public Administration, Taiz

To administer the English Department and to teach English Language up to Cambridge Proficiency level to adult Yemeni students.

Candidates, men only, must be graduates with 5 years' TEFL experience; TEFL qualification desirable.

Salary: £4,589-£5,618 pa tax free.

Benefits: overseas and children's allowances; free furnished accommodation; 2 year contract renewable. 76 AQ 59

CHIEF INSPECTOR OF ENGLISH

(Oman)

Ministry of Education, Oman

Graduate with higher degree in Linguistics or ELT to be responsible under the Omani Head of English for normal inspection duties, in-service training, materials production, ELT on radio and television, advising on examinations and ELT policy. Male applicants, without children.

Salary: £5,210-£6,026. No local taxation.

Benefits: Free accommodation, overseas allowances; 2-year contract renewable 76 CE 17

Return fares are paid. Local contract is guaranteed by the British Council.

Please write, briefly stating qualifications and length of appropriate experience, quoting relevant reference number and title of post for further details and an application form to The British Council (Appointments), 65 Davies Street, London W1Y 2AA.

THE BRITISH COUNCIL

R Y E R S O N
POLYTECHNICAL INSTITUTE
50 GOULD ST. TORONTO, ONTARIO M5B 1E8

FASHION DEPARTMENT

TEACHING POSITIONS

Full-time positions for September, 1977, are available in:

- **Illustration Graphic Design**
- **Introduction to Fashion**
- **Apparel Design/Production**

Suitable candidates should possess advanced academic qualifications (a Master's degree), and teaching and/or practical experience.

Apply in writing, enclosing a resume, to The Dean, Applied Arts Division, Ryerson Polytechnical Institute, 50 Gould Street, Toronto, Ontario M5B 1E8.

A "REVIEW OF NEW COURSES" FEATURE
will be published on
Friday, April 1, 1977
For further details of advertising please contact
John Ladbrook
01-837 1234

Overseas continued

HONGKONG POLYTECHNIC

Professional Appointments— Joint Education Technology

The Polytechnic is committed in its development plans to the introduction of Education Technology and the use of Personalised Systems of Instruction (PSI) into its credit-unitary course structure.

The newly created Education Technology Unit contains a nucleus of permanent staff who work closely with the Academic Departments. In order to encourage and accelerate this work the Polytechnic is providing one "Associated Staff" appointment to each department in anticipation of its future permanent establishment.

Such appointments will be on a two-year contract basis with the parent academic department and involve at least 50 per cent activity with the Education Technology Unit for a minimum period of one year.

Candidates who wish to be considered for these posts would have to be

- (a) professionally qualified in the academic discipline of one of the Polytechnic departments and
- (b) have proven ability in or commitment to some form of education technology development, preferably in the field of PSI. An education qualification would be an added advantage.

Commencing salaries will be dependent upon qualifications and length of previous experience but will not be less than HK$38,040 p.a. (£4,815). In normal cases the maximum salary would be HK$93,540 p.a. (£11,840), which is the maximum of the Senior Lecturer scale. However in exceptional cases an appointment may be offered at Principal Lecturer level, with a salary scale from HK$85,500 (£10,822) to HK$105,600 p.a. (£13,367).

(Note, March 1, 1977, HK$7.90 equals £1)

Appointment will be on two-year gratuity-bearing contract terms initially. Thereafter suitable appointees may be offered further contracts or superannuable terms of service at the discretion of the Polytechnic.

The Polytechnic has 17 academic departments, these being Accountancy, Applied Science, Building and Surveying, Business and Management Studies, Civil and Structural Engineering, Computing Science, Design, Electrical Engineering, Electronic Engineering, Languages, Mathematical Studies, Mechanical and Marine Engineering, Nautical Studies, Production and Industrial Engineering, Social Work, Textiles and an Industrial Centre.

Benefits include passages, long leave, subsidised accommodation, medical and dental treatment, educational allowances and a terminal gratuity equal to 25 per cent of basic salary received over entire contract period.

Further details and application form, which should be returned not later than March 31, 1977 (stating clearly area of academic interest), are obtainable from the Recruitment Unit, Tetoc (Technical and Training Organisation for Overseas Countries), 35/37 Grosvenor Gardens, London SW1W 0BS. Ref: HKP/ET/THES.

tetoc

HONGKONG POLYTECHNIC

Department of Building & Surveying

Senior Lecturer in Building Science

Applications are invited from degree holders, or others with equivalent qualifications and experience, in Physics, Chemistry, Building or Materials Science having

- (a) at least five years' post qualification practical experience *and*
- (b) at least three years' teaching experience *or*
- (c) a combination of (a) and (b) and
- (d) proven administrative ability.

SALARY SCALE:

HK$69,420 to HK$93,540 p.a. by six increments (£8,787 to £11,840 p.a.)

(Note: March 1, 1977, HK$7.90 equals £1.)

Appointment will be on two-year gratuity-bearing contract terms initially. Thereafter suitable appointees may be offered further contracts or superannuable terms of service at the discretion of the Polytechnic.

Benefits include passages, long leave, subsidised accommodation, medical and dental treatment, educational allowances and a terminal gratuity equal to 25 per cent of basic salary received over entire contract period.

Further details and application form, which should be returned not later than April 2, 1977, are obtainable from the Recruitment Unit, Tetoc (Technical and Training Organisation for Overseas Countries), 35/37 Grosvenor Gardens, London SW1W 0BS. Ref. HKP/THES.

tetoc

ISRAEL
BIRZEIT UNIVERSITY

an independent Arab private university in the occupied West Bank has positions open in the following fields for the academic year 1977-78: Accounting, Anthropology, Business Administration, Chemistry (Physical and Inorganic), Economics, Education, English (TOEFL, Literature and Linguistics), Humanities (Ancient and Medieval), Mathematics (Mathematical Statistics, Algebra), Physics (Experimental and Theoretical), Psychology (Experimental), Sociology (Methodology and Demography).

English is the basic language of instruction.

Candidates should have a Ph.D. preferably, or a master's degree with teaching experience.

Salary for M.A. is $5,400 and for Ph.D. $7,000 and up, according to experience. Optional summer teaching available with salaries ranging from $300 to $1,000 for the session. Fringe benefits include relocation allowance (15 per cent of salary). Round trip air transportation is also provided. Only qualified applicants will be acknowledged.

Applications should be addressed to Dr. G. A. Baramki, Dean, Birzeit University, Birzeit, West Bank, Via Israel.

QUEENSLAND — AUSTRALIA
CAPRICORNIA INSTITUTE OF ADVANCED EDUCATION,
ROCKHAMPTON

LECTURER IN EDUCATION
(PSYCHOLOGY OF INSTRUCTION)

Department of Education Studies

Applicants must have an appropriate higher degree and major interests in the theories of teaching and instructional processes. A practical interest in micro teaching, guided self analysis and other forms of interaction feedback systems is required. Applicants should state other areas of interest and competence.

Current Lecturer Scale, $11,851 to $18,389 (Australian) per annum.

Appointments will be made either on a permanent basis or on contract for a two or three year term.

Application forms and further information may be obtained from The Agent General for Queensland, 392 Strand, London WC2R 0LZ.

Closing date, April 1, 1977.

WESTERN AUSTRALIAN TEACHER EDUCATION AUTHORITY
Perth, Western Australia

Applications are invited from suitably qualified persons for the following positions:—

DEAN OF TEACHER EDUCATION
CHURCHLANDS COLLEGE

The Dean will have primary responsibility for educational leadership, co-ordination and development of the School of Teacher Education within the College. The school embraces pre-service courses at Diploma level for teachers of primary and early childhood together with post experience courses at graduate diploma and Bachelor of Education level.

DEAN OF ACADEMIC STUDIES
SECONDARY TEACHERS COLLEGE

The Dean will have primary responsibility for the educational leadership, co-ordination and development of the academic programme of the College. College courses embrace pre-service courses for secondary teachers at Diploma and graduate diploma level, post experience courses for secondary teachers at Bachelor of Education level together with programmes in recreation and library.

DEAN OF ACADEMIC SERVICES
SECONDARY TEACHERS COLLEGE

The Dean will have primary responsibility for the planning, development and supervision of all services to support the academic activities of the College, including the co-ordination of support staff and of media systems, library services and data processing.

QUALIFICATION AND EXPERIENCE

All positions call for high academic qualifications, preferably including qualifications in education, together with extensive administrative and teaching experience relevant to the position.

SALARY AND CONDITIONS OF SERVICE

Appointments will be at Level I, Level II or Level III according to qualifications and experience of the Head of School designation under the salaries recommendation for Colleges of Advanced Education, which carry salaries as of November 26, 1976, of $A29,687 (£18,699 Sterling), $A28,650 (£18,047 Sterling) and $A27,612 (£17,388 Sterling). Conditions of service, superannuation, long service leave, study leave and sick leave are comparable to conditions prevailing in Universities and Colleges, throughout Australia.

LOCATION

Churchlands College is located on a 6½-acre site five miles from the centre of Perth. The College comprises a School of Teacher Education and a School of Business Studies with a total enrolment of some 1,800 students.

The Secondary College is located on a two-acre site adjacent to the University of Western Australia four miles from the centre of Perth. The College offers courses in teacher education, community recreation and library studies with a total enrolment of some 2,000 students.

Applications. Application forms, duty statements and conditions of service may be obtained from:—

Migration Liaison Officer,
Western Australia House,
115 Strand, London WC2R 0AJ

with whom applications close on April 15, 1977.

CLASSIFIED ADVERTISEMENTS

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Extn 575
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House Square
P.O. Box 7
Gray's Inn Road
London WC1X 8EZ

ECOLE SUPERIEURE DE COMMERCE
Le Havre, France

To complete the existing team of English teaching staff in the above school, applications are invited from qualified teachers for the position of:

English Language Teacher
(TEFL, ESP)

The successful applicant (aged 25-35) will possess a fair command of French and have some experience in teaching business English to students (19-23) and/or adults either in Britain or overseas. In addition to a 14-hour teaching commitment he/she will be expected to join in the current research and development of new material for publication and help in the running of the department of modern languages.

Initial engagement for one full year starting 1st September, 1977.

Starting salary: 3,200 FF per month negotiable according to candidate's experience and qualifications.

Personal interview end of April or beginning of May either in London or Le Havre.

Write, with full C.V., to

Michel Poté
Departement d'Anglais
Ecole Supérieure de Commerce
1, rue Emile-Zola
76090—Le Havre-Cédex, France